Review of the 1981-82 British Columbia Herring Fishery and Spawn Abundance

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CONTENTS

List of Figures iv
List of Tables iv
Abstract/Résumé vi
Introduction 1
Methods 1

1981 Herring food and bait fishery 3
Stock assessment and fishery by area 3

1982 Roe herring fishery 7
Queen Charlotte Islands sub-districts (Areas 1, 2E, 2W) 7
North Coast sub-districts (Areas 3, 4, 5) 12
Central Coast sub-districts (Areas 6, 7, 8, 9, 10) 12
Middle East Coast sub-districts (Areas 13, 14, 15, 16) 14
Lower East Coast sub-districts (Areas 17, 18) 15
Lower West Coast Vancouver Island sub-districts (Areas 23, 24) 16
Upper West Coast Vancouver Island sub-districts (Areas 25, 26, 27) 18

1982 Spawn-on-kelp fishery 19

1982 Herring spawn summary 19
Queen Charlotte Islands sub-districts (Areas 1, 2E, 2W) 22
North Coast sub-districts (Areas 3, 4, 5) 22
Central Coast sub-districts (Areas 6, 7, 8, 9, 10) 22
Upper East Coast sub-districts (Areas 11, 12) 22
Middle East Coast sub-districts (Areas 13, 14, 15, 16) 22
Lower East Coast sub-districts (Areas 17, 18) 23
Lower West Coast Vancouver Island sub-districts (Areas 23, 24) 23
Upper West Coast Vancouver Island sub-districts (Areas 25, 26, 27) 23

Acknowledgements 45
References 45
Figures 46

LIST OF FIGURES

Figure

1. Location of Statistical Areas in northern B.C. 46
2. Location of Statistical Areas in southern B.C. 47
3. Herring food and bait fishing boundaries and catches by Statistical Area, B.C., 1981 48
   a. Area 1 48
   b. Area 5 49
   c. Area 6 50
   d. Area 13 51
   e. Area 17 52
4. Roe herring fishing boundaries and hailed catches by gear type and Statistical Area, B.C., 1982 53
   a. Area 2E, Juan Perez Sound - Skincuttle Inlet 53
   b. Area 2E, Atli Inlet 54
   c. Area 2W, Inskip Channel 55
   d. Area 2W, Seal Inlet 56
   e. Area 6, Kitasu Bay - Higgins Pass 57
   f. Area 7, Stryker Bay 58
   g. Area 7, Cape Mark - Thompson Bay 59
   h. Area 14, Hornby - Denman 60
   i. Area 17, Pylades Channel 61
   j. Area 23, Barkley Sound 62
   k. Area 24, Father Charles Channel 63
   l Area 25, Esperanza Inlet 64
   m. Area 27, Winter Harbour 65

LIST OF TABLES

Table

1. Herring spawn intensity categories and weighting factors used to calculate standard square meters 2
2. Conversion from layers of herring eggs to spawn intensity categories 2
3. Anticipated food and bait herring catch quotas by district, B.C, 1981 4
4. Hailed food and bait herring catches by Statistical Area, B.C. 1981 4
5. Distribution of licenced gear by gear type and roe herring area, B.C., 1982 8
6. Anticipated roe herring catches by roe herring area, B.C., 1982 8
7. Hailed roe herring catches by gear type and roe herring area, B.C., 1982 8
8. Annual hailed roe herring catches in Area A (north of Cape Caution) by Statistical Area and gear type, B.C., 1979-1982 9

LIST OF TABLES (cont'd)

Table

9. Annual hailed roe herring catches in Area B (Strait of Georgia) by Statistical Area and gear type, B.C. 1979-1982 9
10. Annual hailed roe herring catches in Area C (West Coast Vancouver Island) by Statistical Area and gear type, B.C., 1979-1982 10
11. Annual landed weight and value of British Columbia roe herring catches, 1979-1982 10
12. Standard square meters of herring spawn deposited in northern British Columbia by herring district and Statistical Area, 1979-1982 20
13. Standard square meters of herring spawn deposited in southern British Columbia by herring district and Statistical Area, 1979-1982 21
14. Summary of individual herring spawnings, B.C., 1982 24

ABSTRACT

Chalmers, D.D., R.D. Humphries and V. Miller. 1985. Review of the 1981-82 British Columbia herring fishery and spawn abundance. Can. Ind. Rep. Fish. Aquat. Sci. 161: 65 p.

During the 1981-82 fishing season in British Columbia, herring were fished for food and bait from November 15 to December 1, 1981 and for roe from March 5 to March 22, 1982. The total food and bait catch was 8,917 tons (8,089 mt). The total roe herring catch was 29,593 tons (26,846 mt) with a landed value of $27.0 million. There were 28 spawn-on-kelp licences issued for a total production of 193 tons (175 mt). The 17.6 million standard square meters of spawn recorded coastwide were below the 1979-81 average of 20.2 million.

Key words: Pacific herring, roe fishery, spawn-on-kelp, catch, spawn.

RÉSUMÉ

Chalmers, D.D., R.D. Humphries and V. Miller. 1985. Review of the 1981-82 British Columbia herring fishery and spawn abundance. Can. Ind. Rep. Fish. Aquat. Sci. 161: 65 p.

Au cours de la saison de pêche 1981-1982 en Colombie-Britannique, le hareng a été pêché comme nourriture et appât du 15 novembre au 1er décembre 1981 et pour la rogue du 5 au 22 mars 1982. Les prises de hareng de consommation et d'appât totalisaient 8 917 t (8 089 tm) tandis que les captures totales de hareng rogué s'élevaient à 29 593 t (26 846 tm), dont la valeur au débarquement se chiffrait à $27 millions. La production totale, tirée de 28 permis d'exploitation de oeufs sur varech, s'élevait à 193 t (175 tm). Sur tout le littoral, la rogue couvrait 17,6 millions de mètres carrés, soit une superficie inférieure à la moyenne de 20,2 millions observée en 1979-1981.

Mots-clés: hareng du Pacifique, pêche de la rogue, oeufs sur varech, prises, oeufs.

INTRODUCTION

Between October and December, adult Pacific herring (Clupea harengus pallasi) begin their migration inshore from offshore feeding areas in preparation for spawning during March and April. While inshore they congregrate in dense schools and hold in the deeper waters of bays and inlets. During this time, they are subjected to two major commercial fisheries in the coastal waters of British Columbia: a food and bait fishery in November/December when the fat content is high and a roe herring fishery that occurs in March just prior to spawning when gonad development is at a maximum.

Once the herring have deposited their eggs, measurements of each spawning are carried out to determine escapement levels. This information along with estimates of natural mortality and recruitment provide the basis for forecasting herring abundance for the coming year (Hourston 1981). The forecasts, along with social, economic and management considerations are used to determine the potential catch limit for each fishery.

The present report is one of a series of publications by the Department of Fisheries and Oceans (DFO) aimed at providing the annual summary of British Columbia herring fishery and spawn abundance. In order to simpify data tabulation, interpretation and comparison with previous years, all tonnage is given in short tons (907.18 kg).

METHODS

The information for the fishery portion of this report was obtained from fishery officers' daily radio telephone reports to Field Operations Headquarters in Vancouver. These reports contain pre-fishery test data (tonnage, fish length and roe maturity), gear counts, opening and closure times, hailed catches and weather conditions.

Spawn data were obtained from annual spawn reports compiled by DFO field staff. These reports document timing and location of individual spawnings as well as length and width of spawn depositions, average layers of eggs on each type of substrate utilized and percentage of each vegetation cover.

Field staff measure spawn patches at low tide by pacing them out and plotting them on large scale charts or shoreline vegetation maps made from aerial photographs (e.g. Haegele and Hamey 1979). In order to determine the extent of sub-tidal depositions, a raking apparatus is dragged along the sea bottom to catch pieces of vegetation along with whatever eggs may be attached. This method has been unreliable in areas where the vegetation is sparse or spotty; therefore, whenever possible, spawns are surveyed by divers.

For this report, spawn data were converted to a standard measurement (standard square meters at medium intensity - SSM) so that spawnings can be compared from area to area and year to year. Standard square meters are calculated by multiplying the length of deposition by the width times a weighting factor based on intensity of egg deposition (Table 1) times the percentage of the spawn area containing vegetation.

Table 1. Herring spawn intensity categories and weighting factors used to calculate standard square meters (SSM).

Intensity category	Very light (VL)	Very Light Light (VLL)	Light (L)	Light Medium (LM)	Medium (M)	Medium Heavy (MH)	Heavy (H)	Heavy Very Heavy (HVH)	Very Heavy (VH)
Weighting factor	0.05	0.2	0.4	0.65	1.0	1.4	1.9	2.4	3.0

Table 2. Conversion from layers of herring eggs to spawn intensity categories (from Haegele et al. 1979).

Substrate	Layers of eggs								
Stringy (grasses, brown algae, stringy reds)	<0.25	0.5	1.0	2.0	3.0	4.0	6.0	7.0	7.8
Leafy (rockweed, kelp, leafy reds)	<0.25	0.5	1.0	1.5	2.0	2.5	3.0	7.5	7.4
Herring spawn intensity based on layers of eggs	Very light (VL)	Very Light Light (VLL)	Light (L)	Light Medium (LM)	Medium (M)	Medium Heavy (MH)	Heavy (H)	Heavy Very Heavy (HVH)	Very Heavy (VH)

In past years, spawnings have been assigned to the various intensity categories in the field. This evaluation tended to be very subjective since it was based on the overall impressions of the thickness of the spawn and the observers' memories of past years' spawnings. As a result, considerable inconsistencies in the data occurred. In order to overcome this problem, a method was developed whereby the intensity factor was based on the actual layers of eggs deposited on the various types of vegetation (Table 2). An example of calculating the standard square meters of spawn in an area is given below.

> A deposition of 600 m by 15 m at an average thickness of 4 layers on brown algae with 60% vegetation cover is 600 x 15 x 1.4 x 0.6 = 7,560 SSM. These numbers often become large and unwieldly for extensive spawnings, so they are converted to a base unit of 1,000 square meters; thus 7,560 SSM becomes 7.56 k SSM.

1981 HERRING FOOD AND BAIT FISHERY

Guidelines for the 1981 food and bait fishery were issued to Industry in October 1981. These guidelines provided information on export, entry and licencing requirements as well as current regulations and proposed fishing patterns. Fishing in all waters was to take place on or after November 15, with individual areas opened by Public Notice as the stocks warranted.

The anticipated catch quotas for each district are shown in Table 3, and the hailed catches for the North and South Coasts are shown in Table 4. It should be noted that the anticipated quotas were set at maximum levels and that actual catches would depend on the abundance of stocks in the individual areas.

In 1981, vessels participating in the food and bait fishery caught 8,917 tons of herring coastwide (Table 4). The largest catches came from the Lower Strait of Georgia (about 6,000 tons) and Browning Entrance in the North Coast (about 2,000 tons). Other fisheries took place in the Queen Charlotte Islands (about 500 tons), the Central Coast (about 250 tons) and Lower Johnstone Strait (about 100 tons).

STOCK ASSESSMENT AND FISHERY BY AREA

The following is a brief summary of stock assessment and the fishing that occurred in each Statistical Area. Location of Statistical Areas in northern and southern B.C. is shown in Figures 1 and 2 respectively, and the herring food and bait fishing boundaries are shown in Figure 3. All figures are appended at the end of the report.

AREA 1

This area opened at 1400 hrs November 15 and closed at 1400 hrs November 27 (Fig. 3a). There were 22 deliveries for a total catch of 482 tons. Sampling indicated an average herring length of 21.2 cm.

Table 3. Anticipated food and bait herring catch quotas by district, B.C., 1981.

District	Anticipated catch
Queen Charloote Islands (Areas 1, 2E, 2W)	500 tons
North Coast (Areas 3, 4, 5)	2,000 tons
Central Coast (Areas 6, 7, 8, 9, 10)	20% of existing stocks to a maximum of 500 tons
Middle East Coast (Areas 13, 14, 15, 16)	1,000 tons
Lower East Coast (Areas 17, 18)	6,000 tons
West Coast Vancouver Island (Areas 23 - 27)	No anticipated openings

Table 4. Hailed food and bait herring catches by Statistical Area, B.C. 1981.

	Area	Catch (tons)
NORTH COAST (north of Cape Caution)	Area 1	482
	Area 5	2,003
	Area 6	258
	Total	2,743
SOUTH COAST (south of Cape Caution)	Area 13	100
	Area 17	6,074
	Total	6,174
Coastwide total:		8,917

AREA 5

Soundings done prior to and during the fishery showed a sizable stock along the 50 fm edge in Browning Entrance. Due to poor weather conditions and large size of the area, no accurate estimate of herring abundance was made but the stock was considered to be comparable to previous years.

Area 5 was opened to fishing at 1400 hrs November 15 and closed at 1400 hrs November 27 (Fig. 3b). Fishing effort was mainly concentrated off Freeman Pass - Cape George near the 50 fm edge. The trawl fleet was considerably more successful than the seines because the trawls could fish during the day when the herring are near the bottom and during poorer weather conditions that are prevalent during the fall months.

The total hailed catch was 2,003 tons with trawls making 67 deliveries for 1,183 tons and seines making 41 delivers for 820 tons. Sampling showed the herring to be generally of good size with 70% above the 20.0 cm size requirement.

AREA 6

Soundings began November 17 around the northwest end of Aristazabal Island. Approximately 700 tons of herring were located at the east end of Parker Pass on November 18 and the estimates increased by 3,000 tons by November 19. However, there were no commercial fishing vessels in the area at this time. By November 22, one trawl and four seines were scouting and on November 23 an estimated 1,200-1,500 tons of herring were located.

Area 6 was opened to fishing until further notice at 1800 hrs November 23 (Fig. 3c). There were seven commercial vessels in the area. By November 25, 11 deliveries had hailed a total catch of 258 tons. The area was closed at 2100 hrs the same day. Sampling showed that between 69% and 80% of the fish caught were greater than 20 cm.

AREA 13

Sounding surveys began in the second week of November and continued throughout the season. Stock estimates ranged between 35,000 and 85,000 tons. Sampling was done by commercial fishing vessels on a volunteer basis as required. Some samples taken during the third week of November indicated a high proportion of small fish with up to 90% under the 20.0 cm size requirement. Based on this information, no fishery was anticipated at that time. Just prior to November 30, however, seine samples made during the evening skims indicated the presence of larger fish in the area. Test tows made by trawls in the deeper water also produced larger fish.

Area 13 was opened to fishing on November 30 at 0600 hrs and closed at 1400 hrs the same day (Fig. 3d). The opening was set to coincide with the fishery occurring in Area 17 in order to limit the fleet size. Fishing took place in the vicinity of Discovery Pass. One seine and three trawls hailed a catch of 100 tons.

AREA 17

Stock assessments commenced November 1 with Departmental vessels sounding throughout the Lower East Coast herring district. Extensive soundings were carried out in Stuart Channel, Trincomali Channel, Swanson Channel, Satellite Channel, Navy Channel and Plumper Sound. Very small fish were identified during the first week and the largest concentration of fish occurred in Navy Channel and Plumper Sound where 500-1,000 tons were estimated.

Stocks began building and by November 10 the total tonnage estimated in the Lower East Coast was:

Lower Stuart Channel (Ruxton Pass-Danger Reefs)	3,000 - 4,000 tons
Yellow Point	1,000 - 1,500 tons
Upper Trincomali (Porlier Pass-Spotlite Cove)	2,000 - 3,000 tons
Navy Channel - Plumper Sound	Nil
Swanson Channel	Few small schools
Satellite Channel	Nil

Sampling done in the Porlier Pass-Danger Reefs area indicated good size fish with 66% to 72% being above the 20.0 cm size required by Industry. The fishing fleet started moving into the area on November 16. During that evening, there were estimated between 8,000 and 10,000 tons of herring between Cardale Point and Shingle Spit. On the morning of November 17, the commercial fishing vessel, Pender Isle, made a test set off Rose Islets. Although the samples indicated large fish with 82% being over the 20.0 cm length cut off, it was not possible to consider a fishery opening due to the large concentration of fishing vessels. By this time, there was in excess of 100 boats sounding the area. Further soundings showed 2,000 - 3,000 tons of herring just above Danger Reefs. The fishing vessel Karenora made a test set and sampling showed that 65% of the herring were greater than 20.0 cm in length.

Boundaries were established to prevent fishing on the heavy concentration of fish in Porlier Pass. The area opened to fishing at 0615 hrs, November 17 and closed at 1800 hrs the same day (Fig. 3e). Of the 112 vessels participating, 94 boats hailed catches for a total of 2,100 tons.

The second opening took place on November 23 (Fig. 3e). Approximately 2,000 tons had been identified between Porlier Pass and Spotlight Cove. By the time the area opened at 0700 hrs, the fleet had dispersed the herring and fishing was very slow. Most sets were catching only 2-3 tons and by 0900 hrs, the 128 vessels in the area had only hailed 300 tons. The boundary was then extended westward and by 1200 hrs, 488 tons had been hailed. Most boats remained at anchor during the afternoon and throughout the evening. At 0400 hrs, November 24 a second area between Danger Reefs and Shingle Spit was opened (Fig. 3e). The area closed at 0758 hrs and total hails for both openings were 2,424 tons.

The third fishery took place on November 30 with approximately 135 vessels participating. The area between Porlier Pass and Shingle Spit was sectioned off and opened at 0630 hrs (Fig. 3e). By the time the area was closed at 1014 hrs, 93 vessels hailed catches of 1550 tons. This brought the total hailed catch for the season to 6,074 tons. On December 1 at 1220 hrs, the Lower East Coast district closed for the balance of the season.

1982 ROE HERRING FISHERY

The experimental 1981 Area Licensing Program for the roe herring fishery was carried over into the 1982 season. The same three licencing areas defined for use in 1981 were used again in 1982 and each eligible roe herring fisherman was asked to choose one of the three areas in which to fish. The three areas and the distribution of licenced gear by area for 1982 are shown in Table 5.

The Department attempted in 1982 to achieve a 55%:45% seine/gillnet catch division north of Cape Caution, and a 55%:45% seine/gillnet catch division south of Cape Caution. The anticipated catches are shown by area in Table 6. The actual 1982 roe herring catches (preliminary hailed catches) are shown in Table 7.

The annual roe herring catches by Statistical Area and gear type are shown for the years 1979 to 1982 in Table 8 for Area A, Table 9 for Area B and Table 10 for Area C. The 1982 herring fishing boundaries are shown in Figures 4 a-m appended at the end of the report.

Briefly, the 1982 roe herring fishery accounted for a coastwide catch of 29,593 tons (hailed catch data). Of this total, 12,423 tons came from Area A (north of Cape Caution), 9,400 tons from Area B (Strait of Georgia) and 7,700 tons from Area C (West Coast Vancouver Island) (Table 7). The landed value of the roe herring catch in 1982 was $27.01 million which is down from 1981 when 32,087 tons were caught for a value of $34.68 million (Table 11). The 1982 landed value was estimated on the basis that the average price paid for gillnet-caught herring was $1,055/ton and the average price paid for seine-caught herring was $768/ton.

A summary of the 1982 in-season stock assessment and the resultant fisheries in each area is presented below.

QUEEN CHARLOTTE ISLANDS SUB-DISTRICTS (AREAS 1, 2E, 2W)

Area 1 - Assessment

For the second consecutive year Naden Harbour remained closed due to inadequate stock to sustain a fishery.

Area 2E - Assessment

Skincuttle Inlet - Juan Perez Sound

Juan Perez Sound surveys began on March 6. On that date, 6,000-7,000 tons

Table 5. Distribution of licenced gear by gear type and roe herring area, B.C. 1982.

Roe herring area	Numbers of licenced vessels	
	Seines	Gillnets
Area A - North of Cape Caution	82	464
Area B - Strait of Georgia	80	572
Area C - West Coast Vancouver Island	79	265
TOTAL	241	1301

Table 6. Anticipated roe herring catches by roe herring area, B.C., 1982.

Roe herring area	Anticipated catch (tons)		
	Seines	Gillnets	Total
Area A - North of Cape Caution	6,600	5,400	12,000
Area B - Strait of Georgia	6,650	6,350	13,000
Area C - West Coast Vancouver Island	6,000	4,000	10,000
TOTAL	19,250	15,750	35,000
Target catch division	55%	45%	

Table 7. Hailed roe herring catches by gear type and roe herring area, B.C., 1982.

Roe herring area	Seines	Gillnets	Total
Area A - North of Cape Caution	6,707	5,716	12,423
Area B - Strait of Georgia	3,400	6,000	9,400
Area C - West Coast Vancouver Island	4,385	3,385	7,770
TOTAL	14,492	15,101	29,593
Achieved catch division	49%	51%	

Table 8. Annual hailed roe herring catches in Area A (north of Cape Caution) by Statistical Area and gear type, B.C., 1979-1982.

Year	Gear type[a]	Hailed catch (tons) by Statistical Area 1	2E	2W	3	4	5	6	7	Total Area A by gear	Overall total Area A
1979	SN	-	7,532	960	-	-	1,450	-	-	9,942	
	GN	111	2,460	-	-	-	1,363	-	-	3,934	
											13,876
1980[b]	SN	-	1,645	930	-	-	1,690	-	-	4,265	
	GN	100	1,366	312	-	-	1,290	661	-	3,729	
											7,994
1981	SN	-	4,340	1,000	-	-	1,200	-	-	6,540	
	GN	-	1,732	-	-	-	410	1,437	1,099	4,678	
											11,218
1982	SN	-	2,785	1,297	-	-	-	-	2,625	6,707	
	GN	-	1,541	-	-	-	-	407	3,768	5,716	
											12,423

[a] SN - seine, GN - gillnet.
[b] Strike year.

Table 9. Annual hailed roe herring catches in Area B (Strait of Georgia) by Statistical Area and gear type, B.C., 1979-1982.

Year	Gear Type[a]	Hailed catch (tons) by Statistical Area 14	15	16	17	18	Total Area B by gear	Overall total Area B
1979	SN	-	-	-	-	-	-	
	GN	5,500	-	-	-	-	5,500	
								5,500
1980[b]	SN	290	-	-	-	-	290	
	GN	3,757	-	-	-	-	3,757	
								4,047
1981	SN	3,000	-	-	-	-	3,000	
	GN	7,024	-	-	-	-	7,024	
								10,024
1982	SN	-	-	-	3,400	-	3,400	
	GN	6,000	-	-	-	-	6,000	
								9,400

[a] SN - seine, GN - gillnet.
[b] Strike year.

Table 10. Annual hailed roe herring catches in Area C (West Coast Vancouver Island) by Statistical Area and gear type, B.C., 1979-1982.

Year	Gear Type[a]	Hailed catch (tons) by Statistical Area 23	24	25	27	Total Area C by gear	Overall total Area C
1979	SN	7,000	-	6,000	450	13,450	
	GN	3,000	2,500	4,050	431	9,981	
							23,431
1980[b]	SN	-	2,403	-	-	2,403	
	GN	-	900	2,000	750	3,650	
							6,053
1981	SN	3,400	-	3,000	-	6,400	
	GN	620	1,796	1,500	745	4,661	
							11,061
1982	SN	3,385	700	-	300	4,385	
	GN	-	885	2,100	400	3,385	
							7,770

[a] SN - seine, GN - gillnet
[b] Strike year.

Table 11. Annual landed weight and value of British Columbia roe herring catches, 1979-1982.[a]

Year	Landed weight (tons)	Landed value ($ million)
1979	42,807	120.86
1980[b]	19,330	22.06
1981	32,087	34.68
1982	29,593	27.01

[a] Used hailed catches for 1979 to 1982.
[b] Strike year.

of herring were located in Skincuttle Inlet. Schools broke up by March 10 and normal early spawning occurred. By March 12, fish had dispersed and early spawning was complete. In Juan Perez Sound, 4,000-6,000 tons of herring were tested on March 13 (roe yield 9%) with indications that small (pencil) roes were present.

Atli Inlet

On March 8, 2,500-3,000 tons of herring were located in Atli Inlet. Tonnage estimates remained unchanged until March 11 when inside stocks began to move out of the area. Stocks remained low in Atli Inlet until March 19 when 750 - 1,000 tons were located inside the inlet; a test set conducted in the morning indicated 10.3% roe yield. On March 22, 3,000 tons of herring were observed in the area.

Area 2E - Fishery

Skincuttle Inlet - Juan Perez Sound

Seines: Juan Perez Sound, sub-area 2-13 (Fig. 4a), opened to seines from 1725 hrs until 1838 hrs (1 hr 53 min fishery) March 14; 66 seines were in the area and took an estimated 2,510 tons of herring. The proposed target catch for the area was 1,000 - 1,500 tons.

Gillnets: A gillnet fishery commenced at 1800 hrs on March 20 and remained open until 0900 hrs March 22 (39 hr fishery) with 140 gillnets operating. The estimated total catch was 1,541 tons, surpassing the target catch of 1,200 tons. Boundaries included sub-area 2-16 (Fig. 4a).

Atli Inlet

Seines: Seines began fishing in Atli Inlet, sub-area 2-9 (Fig. 4b), at 1320 hrs March 22 and closed at 2015 hrs the same day (6 hr 35 min fishery). The target catch for the fishery was 700 tons; the estimated actual catch was 275 tons.

Area 2W - Assessment

Louscoone Inlet

Soundings conducted in Louscoone Inlet on March 9 showed 800 tons of herring in the area, with an apparent high incidence of spawned-out (spent) fish. By March 14, 1,000 tons had been located inside and 500 tons outside the Louscoone Inlet; both bodies of fish were tested at 3% roe yield. Testing on Louscoone stocks on March 15 indicated that 80% of the fish were spent.

Inskip Channel

The fishing fleet reported substantial bodies of herring in Inskip Channel on March 15. The stock was estimated at 1,500 tons on March 17 and tested at 7.5% roe yield on March 19.

Port Louis

Soundings started March 2. On March 3, 600 tons of herring were observed between Benson Rock and Louis Point. On March 7, 100 tons were observed at Kiokathli Inlet.

Area 2W - Fishery

Inskip Channel

Seines: Inskip Channel, sub-area 2-37 (Fig. 4c), opened to seines at 0835 hrs March 20 and closed at 1455 hrs March 20 (10 hr 20 min fishery). Nineteen seines hailed 755 tons, testing at 11.5% roe yield.

Seal Inlet

Seine: A seine fishery commenced in Seal Inlet, sub-area 2-46 (Fig. 4d), on March 22 at 0800 hrs and closed at 0810 hrs March 22 (10 min fishery). Five seines took an estimated catch of 542 tons.

NORTH COAST SUB-DISTRICTS (AREAS 3, 4, 5)

Areas 3 to 5 - Assessment

Port Simpson

In Port Simpson soundings began on March 3 and continued until March 31. Estimates of total stock size were between 3,600 and 4,300 tons. The spawning requirement for the area was set at 10,000 tons. Consequently, no opening was declared.

Kitkatla Inlet

Test fishing in Kitkatla Inlet commenced on March 15. The maximum stock size of herring located at any one time was between 2,200 and 2,500 tons. In addition to the tonnage sounded, the spawn from approximately 2,000 to 3,000 tons of early spawners was reported. The spawning requirement for the Kitkatla area was set at 10,000 tons and, hence, no opening was declared.

Area 3 to 5 - Fishery

Due to low stock abundance and a severe shortage of 3- and 4-year-old herring, no fisheries were possible in Areas 3-5 in 1982.

CENTRAL COAST SUB-DISTRICTS (AREAS 6, 7, 8, 9, 10)

Area 6- Assessment

Kitasu Bay-Higgins Pass

Test fishing began in Kitasu Bay on March 4 and 1,200-1,400 tons of herring were estimated to be present on that day. The next evening (March 5), the stock

estimate had increased to 2,000 tons. On March 11 to March 15, stock estimates varied from 300 to 2,000 tons. On March 18, stocks increased to 1,600 - 2,000 tons. The 700-800 tons of herring sounded on March 19 consisted of mixed maturities and spent fish. A light spawn was in progress on March 21, but by March 24 no further stocks were observed.

Area 6 - Fishery

Kitasu Bay-Higgins Pass

In sub-areas 6-16, 6-17 and 6-18 (Fig. 4e), a gillnet fishery opened at 0800 hrs March 21 and closed at 0800 hrs March 22 (24 hr fishery). The 105 gillnets fished for an estimated catch of 407 tons.

Area 7 - Assessment

Thompson Bay

Soundings in Thompson Bay on March 7 indicated 500-600 tons of herring in the area. Stocks located on March 10 were estimated at 1,700 - 1,750 tons and tested at 2% roe yield. There was no change in stocks until March 14 when the estimate rose to 1,850 tons, followed by a decrease back to 1,750 tons the next day.

Cape Mark

Fish moved into this area March 16 and heavy spawning was underway by March 18. Stocks were estimated at 5,000 tons.

Stryker Bay

Stryker Bay herring were estimated at over 2,000 tons on March 13 with a roe yield of 11%. For the next four days stocks fluctuated from 1,500 tons to 3,000 - 3,500 tons with test sets averaging 13% roe yield.

Area 7 - Fishery

Stryker Bay

Stryker Bay, sub-area 7-18 (Fig. 4f), opened to seines from 0615 hrs until 0705 hrs (1 hr 30 min fishery) on March 15. An estimated 2,625 tons were taken at over 10% roe recovery. Thirty seines took part in the fishery.

Cape Mark - Thompson Bay

On March 18 at 1400 hrs the Cape Mark - Thompson Bay area opened to gillnets and closed at 0800 hrs March 19 (18 hr fishery). Three hundred gillnets participated in the fishery for a catch of 3,375 tons. Fishing was restricted to sub-areas 7-1, 7-2 and 7-19 (Fig. 4g). Following the fishery, stocks remaining in the area were assessed at 1,500 tons.

A second gillnet fishery took place in the Cape Mark-Thompson Bay area from 0800 hrs until 1600 hrs March 21 (8 hr fishery). A total of 175 gillnets hailed 393 tons from sub-areas 7-18, 7-19 and 7-20 (Fig. 4g).

Area 9 - Assessment

Rivers Inlet

Commencing on March 9, soundings indicated 170 tons of herring in Rivers Inlet, building to 400 - 500 tons by March 11. Total stocks in the area on March 12 were estimated at 470 tons (thought to be "homesteader" stocks). By March 15, stocks had declined to 250 tons with light spawning occurring and by the following day, the fish had dispersed. Monitoring continued until March 23 but no change in stock size significant enough to warrant a fishery occurred.

Area 10 - Assessment

Takush Harbour - Smith Inlet

Herring stocks in Area 10 reached a high of 200 tons in Takush Harbour on March 20 and a high of 125 tons in Smith Inlet. Stocks diminished to 25 tons at the head of Smith Inlet by March 19. Monitoring over the next few days indicated no new stocks present; stocks in this area were not large enough to warrant a fishery.

MIDDLE EAST COAST SUB-DISTRICTS (AREAS 13, 14, 15, 16)

Area 13 - Assessment

Soundings began in Hoskyn Channel on February 22, yielding an estimated 4,000-5,000 tons of herring distributed throughout the area in a number of different schools composed of fish in various stages of maturity. On March 6, an estimate of 6,000 tons was obtained for the area and testing showed that they were mostly large fish at 4% roe yield. By March 10, the stocks had started to break up and spent fish were found to be mixed with mature and maturing fish, causing the roe yield to remain low (5% - 6%). The next day (March 11) a body of fish estimated to contain 2,000 tons was tested at 7% roe yield; numerous spent fish were present in the school. Spawning in the area continued, yet no new stocks were identified. Hoskyn Channel appears to be a holding area for fish destined for the Powell River-Lund spawning grounds.

Area 14 - Assessment

Test fishing began on February 22 in the area from Northwest Bay to Cape Lazo. On February 23, scattered schools in deep water were located in the Cape Lazo-Cape Mudge area and an estimated 4,000 tons in Deep Bay. By the following day (February 24), the Deep Bay fish had diminished to 500 tons, as the fish apparently moved out of the area. Within 4 days stocks increased to 6,000 tons in Deep Bay and small scattered schools were evident in Lambert Channel. A roe yield test conducted on a small school in this area indicated an average roe

yield of 10.35% (weight method). However, this test was not considered to be representative of the stocks in the entire area.

By March 3, Lambert Channel stocks had built up to 500-1,000 tons in scattered schools, and the Northwest Bay to Chrome Island area showed no sign of fish. Spawning occurred on March 5 in the Denman Island area from the old ferry terminal to Fillongley Park, off Cape Lazo, and a light spawning was in progress off Bowser. Stocks appeared to have become concentrated close to the shores as the fish prepared to spawn, and no other significant bodies of herring were found elsewhere in the area. Test sets off Komas Bluff (northeast shore of Denman Island) and off Qualicum Bay on March 6 resulted in 0% roe yield, with spent fish in both sets. Patrol vessels, test seines and the fishing fleet continued to monitor the area in order to identify suitable stocks for a seine fishery.

Area 14 - Fishery

Hornby Island - Denman Island

A total of 420 to 440 gillnets participated in a fishery from 1600 hrs March 5 until 2000 hrs March 6, and then throughout an extension until 0700 hrs March 7 (39 hr fishery). The hailed catch from this fishery was 6,000 tons. During the fishery, gear was concentrated around the Komas Bluff area and along the Bowser shoreline (Fig. 4h).

Area 15 - Assessment

Stock assessment commenced in the Powell River area on February 22 but no stocks were observed on that date. On February 23, 1,500-2,000 tons were estimated by sounder in the Lund area and tested at 0% roe yield; these fish were large. Scattered schools were evident in the area from Atrevida Reef to Lund on February 24 and soundings in the Powell River area indicated 4,000-5,000 tons. On February 27-28 in the Powell River - Westview vicinity, fish were concentrated close to shore, making assessment difficult. One test set conducted 1.6 km west of Grief Island indicted a 2% roe yield. At this time (February 27-28), an estimated 2,500 tons of herring were in the Lund area. Two schools of herring totalling 4,000 tons were located off Lund and Sliammon on March 2. At this time, spawning commenced at Atrevida Reef and Scuttle Bay and the 5,000 tons recorded on March 3 dissipated to the beaches. Soundings around Savary Island, Harwood Island and adjacent areas showed no evidence of herring. Spawning continued into the following week and no new stocks were found.

LOWER EAST COAST SUB-DISTRICTS (AREAS 17, 18)

Area 17 - Assessment

An estimated 20,000 tons of herring were sounded on February 22 in the area south of Dodd Narrows to Porlier Pass. The two samples taken indicated the presence of immature fish in the area. By the next day most of the stocks had left the area. Small scattered schools were observed in Northumberland Channel (these could have been fish from the Porlier Pass area heading north).

In the vicinity of Retreat Cove to Porlier Pass, 9,000 - 9,500 tons of herring were located and tested on March 9 with results indicating 75% spent fish. By March 12, soundings showed that schools had scattered and again, roe testing revealed a high percentage of spent fish. No fishery could be staged due to the presence of stocks in mixed stages of maturity.

Area 17 - Fishery

Pylades Channel

A seine fishery commenced in the upper portion of Pylades Channel at 2000 hrs March 7 and closed at 0845 hrs March 8 (12 hr 45 min fishery). Fifty to 60 seines were operating in the area at the time of the opening but by midnight, gear in the area had increased. Seines hailed 3,400 tons from this fishery. Fishing was restricted to upper Pylades Channel with the southern boundary from Whaleboat Island to a point magnetic north of Valdes Island (Fig. 4i).

Area 18 - Assessment

In Plumper Sound, 4,000 - 5,000 tons were located when test fishing commenced on February 22. The stocks increased to 10,000 tons on February 26 and sampling indicated 0% roe yield. A light skimmer was observed in Active Pass on March 1. Five thousand tons of herring were observed around North Pender Island on February 28, but these fish had dispersed by March 2. Another skimmer of 3,000 tons was observed in the Navy Channel to Walker Rock area. On March 3, no fish were evident in either Plumper Sound or upper Stuart Channel. However, fishermen later reported a 5,000-ton body of herring in Plumper Sound which was subsequently investigated by DFO personnel on March 10. Only 1,500 tons could be located in the area and tests indicated the presence of a mixture of maturity stages and spent fish.

Spawnings appeared to be generally later in Area 18 than last year. Light spawnings occurred in Ganges Harbour and Welbury Bay. Spawnings were much lower than the 10-year average, but consistent with the level observed in the past 3 or 4 years.

LOWER WEST COAST VANCOUVER ISLAND SUB-DISTRICTS (AREAS 23, 24)

Area 23 - Assessment

On February 22, initial soundings indicated a large school of fish in Trevor Channel. This school consisted of 70% anchovies and the remainder were immature herring. Soundings continued and on March 1 an estimated 2,000 tons of herring were located in Barkley Sound. This stock increased to 6,000 tons by March 6; 4,500 tons in Imperial Eagle Channel and 1,500 tons in the Chrow Island - Newcombe Channel area. Test results revealed 3% - 7% roe yields. By March 8, stocks in Barkley Sound had diminished to 3,000 - 3,500 tons and continued to decline to less than 1,000 tons on March 14. A test conducted in the early evening of March 14 showed a 10.5% roe yield, but with indications of small fish (40% below the cutoff length of 18.5 cm) and 5% spent fish in the area. Another

test set done after dark showed a roe yield of 9.5% with 20% of the sampled fish below the cutoff length of 18.5 cm.

Area 23 - Fishery

Seines: A seine fishery was held in sub-area 23-9 (Fig. 4j) from 2457 hrs until 0157 hrs March 17 (1 hr fishery). An estimated 2,000 tons of herring at 11% roe yield were taken by 67 seines.

A second fishery took place in sub-area 23-9 from 2230 hrs until 2300 hrs March 18 (30 min fishery) with 45 seines participating. Seines hailed 350 tons for this fishery at the 11% roe recovery. However, the hailed herring were not representative of total catch which was estimated at 1,385 tons. The total catch in Barkley Sound, therefore, was estimated to be 3,385 tons.

Area 24 - Assessment

Sydney Inlet

Approximately 8,000 - 1,000 tons of herring were found at the entrance to Sydney Inlet on February 23. By February 26, this body of fish had increased to 3,000 - 4,000 tons and was located along the east side of the inlet. Monitoring continued and tests showed 0% roe maturity on February 28, 6.5% on March 2 and 5.5% on March 5 when the stocks in the area increased to 5,000 tons. Numerous small schools of herring were observed in the Hesquiat Harbour area on March 4. Sydney Inlet fish were estimated again at 5,000 tons on March 6 and tested at 5% roe maturity. Spawning began on March 7 and by March 8 there was a noticeable decrease to 3,500 tons in stock size in Sydney Inlet. Spawning continued and no new stocks entered the area throughout the period March 7 - 19. On March 10, stocks were estimated at 1,000 tons, on March 11 at less than 1,000 tons and on March 13, at less than 500 tons.

Father Charles Channel

About 600 tons of herring were found in the vicinity of Father Charles Channel on March 1, and by March 3 the stock had built to an estimated 3,500 tons, testing at 4.5% roe maturity. By March 6, stocks in the Father Charles Channel area had increased to 4,000 tons and tested at 8% roe yield on March 7. Following seine and gillnet fisheries on March 8 and 9, stocks were reassessed at 2,000 - 3,000 tons on March 11, less than 2,000 tons on March 12, and less than 1,000 tons on March 13. Monitoring continued until March 21 but no new stocks appeared in the area.

Area 24 - Fishery

Father Charles Channel

Gillnets: Father Charles Channel opened to gillnets from 1600 hrs March 8 until 1600 hrs March 9 (24 hr fishery) with 40 gillnets operating. The catch was 885 tons at 12% roe yield. Boundaries of the fishing area are shown in Figure 4k. The beach near Kraan Island in Epper Pass, McIntosh Bay, Elbow

Bank and Yarksis Beach were closed to gillnet fishing to protect spawning stocks.

Seines: While the gillnet fishery was in progress, a seine fishery opened at 1730 hrs March 8 in Father Charles Channel and closed at 1830 hrs (1 hr fishery) taking an estimated catch of 700 tons at 11% roe yield. Sixty-five seines participated in this fishery which took place inside and easterly of the outer boundary in Calmus Passage and inside or northerly of the outer boundary in Father Charles and Templar Channels (Fig. 4k).

UPPER WEST COAST VANCOUVER ISLAND SUB-DISTRICTS (AREAS 25, 26, 27)

Area 25 - Assessment

Nootka Sound

Soundings commenced on February 22 in the Nootka Sound area and a large school of fish estimated at 3,000 - 4,000 tons was observed moving back and forth outside Nootka Light. The following day this school could not be found, but 5,000 - 10,000 tons of fish were located outside Centre Island in Esperanza Inlet. By March 1, the estimated tonnage in Nootka Sound had declined to 3,000 - 4,000 tons and test sets indicated that these stocks were mixed with anchovies and chinook grilse. Stocks continued to decline in the Nootka Sound area and by March 14 only 800 tons of unspawned herring could be located. With the exception of very minor spawnings off Bajo Reef, no spawning was evident in Nootka Sound in 1982.

Esperanza Inlet

On March 1, 6,000 - 8,000 tons of herring were located in the Esperanza Inlet. By March 5, stocks had increased to 9,000 tons and by March 7 to 10,000 tons. Testing was done in this area.

Area 25 - Fishery

Esperanza Inlet

Gillnets: At 1800 hrs March 7, gillnets commenced fishing in sub-areas 25-13 and 25-14 (Fig. 4e). Initially, 150 gillnets were operating but this number decreased to 30 by the close of the fishery at 1200 hrs March 12 (4.5-day fishery). A catch of 2,100 tons was made with an average roe recovery of 12%.

Area 27 - Assessment

Winter Harbour

Stock assessment began on February 23 in the Winter Harbour area, but no herring were located until March 1 when 250 tons were observed. This stock increased to 600 tons the following day and test set indicated a 5% roe yield. By March 3, stocks had built up to 750 tons and continued to increase resulting in sufficient stocks to warrant a fishery on March 7. After the fisheries closed, spawning stocks were estimated at 3,500 tons.

Klaskish Inlet

Total stocks in the Klaskish Inlet area were estimated at 4,000 tons. However, samples taken indicated the presence of older fish which had matured and spawned out in an abnormal fashion.

Area 27 - Fishery

Winter Harbour

Seines: Two "pocket" fisheries for seines took place in Winter Harbour sub-area 27-3 (Fig. 4m) with only four seines participating in one of these fisheries. A total of 75 tons were taken on March 7 and an additional 225 tons on March 8.

Gillnets: A gillnet fishery opened in sub-area 27-3 at 1300 hrs March 8 and continued for 6 days, closing at 1200 hrs March 14. Fourteen gillnets participated in this fishery and took a catch of 400 tons. Initially, Browning Inlet was closed to fishing but at 1200 hrs March 12 it was opened. All boundaries within sub-area 27-3 were removed for the last 24 hours of the fishery.

Klaskish Inlet

Stocks maturing and spawning out in an abnormal fashion prevented a fishery from taking place in Klaskish Inlet.

1982 SPAWN-ON-KELP FISHERY

In 1982, 28 licences were issued. Each licence holder was allowed 7,258 kg of drained weight product. (Drained weight means that the product was allowed to drain for up to 12 hours prior to weighing.)

Total landings in 1982 were 174,810 kg for an average production per licence of 6,243 kg (total landings are preliminary and actual landings may vary slightly). By comparison in 1981, 191,145 kg were landed for an average production of 6,827 kg per licence.

1982 HERRING SPAWN SUMMARY

A total of 17.6 million standard square meters (SSM) of spawn were recorded for the British Columbia coastline during 1982 (Tables 12 and 13). This was well above the 13.5 million SSM reported in 1981, but still below the 1979-81 average of 20.2 million SSM (Table 13). Generally, spawnings above Cape Caution were higher than average with the Central Coast (Areas 6-10) showing the greatest increase. Spawn depositions in the Strait of Georgia were also well above average with the Middle East Coast (Areas 13-16) being exceptionally high. The West Coast of Vancouver Island showed disappointing spawnings which were one third of the 1979-81 average.

Table 12. Standard square meters (SSM x1000) of herring spawn deposited in northern British Columbia by herring district and Statistical Area, 1979-1982.

Area	1979	1980	1981	1982	(3-year average) 1979-81
Queen Charlotte Island					
1	30.25	110.82	39.36	110.82	60.14
2E	533.51	1550.65	1517.98	1223.57	1200.71
2W	134.88	115.39	211.71	550.55	154.02
	698.64	1776.86	1769.05	1884.94	1414.87
North Coast					
3	516.12	170.95	291.16	28.18	326.08
4	373.44	317.72	565.36	727.02	418.84
5	657.91	735.27	410.23	359.58	601.14
	1547.47	1223.94	1266.75	1114.78	1346.06
Upper Central Coast					
6	97.74	727.41	490.06	423.94	438.40
	97.74	727.41	490.06	423.94	438.40
Lower Central Coast					
7	360.69	1194.52	1072.67	1544.98	875.96
8	170.08	325.70	164.40	190.32	220.06
9	12.96	10.05	2.86	54.02	8.62
10	10.35	41.25	13.91	181.76	21.84
	554.08	1571.52	1253.84	1971.08	1126.48
Total North Coast	2,897.93	5,299.73	4,779.70	5,394.74	4,325.81

Table 13. Standard square meters (SSM x1000) of herring spawn deposited in southern British Columbia by herring district and Statistical Area, 1979-1982.

Area	1979	1980	1981	1982	(3-year average) 1979-81
Upper East Coast					
11	13.09	6.35	0.82	-	6.75
12	15.16	358.85	217.37	167.27	197.13
	28.25	365.20	218.19	167.27	203.88
Middle East Coast					
13	242.30	193.75	272.53	480.69	236.19
14	6699.32	3938.85	2205.83	6195.81	4281.33
15	5185.32	538.72	848.98	1234.10	2191.01
16	40.80	42.32	0.44	10.80	27.85
	12167.74	4713.64	3327.78	7921.40	6736.38
Lower East Coast					
17	775.26	2096.58	1085.64	2173.27	1319.16
18	59.54	70.13	114.08	37.42	81.25
	834.80	2166.71	1199.72	2210.69	1400.41
Lower West Coast					
23	894.47	1091.04	426.42	291.81	803.98
24	2129.56	2368.81	1792.94	168.64	2097.10
	3024.03	3459.85	2219.36	460.45	2901.08
Upper West Coast					
25	5317.50	998.55	625.80	720.36	2313.95
27[a]	2138.75	3777.76	1173.12	722.23	2363.21
	7456.25	4776.31	1798.92	1442.59	4677.16
Southern Mainland					
29	-	0.84	-	-	0.84
Total South Coast	23,511.07	15,482.55	8,763.97	12,202.40	15,919.75
COASTWIDE	26,409.00	20,782.28	13,543.67	17,597.14	20,245.56

[a] Area 27 spawnings do not include Klaskish Inlet, as no estimate was available of bare area or egg densities.

The following is a summary of spawnings by herring roe district. Herring spawn depositions are shown by Statistical Area in Table 12 for northern B.C. and Table 13 for southern B.C. Individual 1982 herring spawnings are listed in Table 14 at the end of this section.

QUEEN CHARLOTTE ISLANDS SUB-DISTRICTS (AREAS 1, 2E, 2W)

A total of 1884.9 SSM of spawn were deposited in the Queen Charlotte Islands in 1982. This was an increase over 1981 (1,769.1 SSM) and well above the 1979-81 average of 1,414.9 SSM. Spawnings on the east coast were down slightly, but there was a corresponding increase on the west coast.

It can be noted that in 1982 major spawnings in Area 2E have shifted from Juan Perez Sound, where the majority of the spawning took place in 1981, to Skincuttle Inlet.

NORTH COAST SUB-DISTRICTS (AREAS 3, 4, 5)

Spawnings in the North Coast were down slightly from 1981 levels. Area 3 showed the largest decline dropping from 291.2 SSM in 1981 to 28.2 SSM in 1982. Area 4 showed an increase from 565.4 SSM in 1981 to 727.0 SSM in 1982. This was well above the 1979-81 average of 418.8 SSM in Area 4. Area 5 continued its downward trend declining from 410.2 SSM in 1981 to 359.6 SSM in 1982. This level was almost one half of the 3-year average.

CENTRAL COAST SUB-DISTRICTS (AREAS 6, 7, 8, 9, 10)

In 1982, there was a large increase in herring spawn in the Central Area. Herring spawn in Area 7 increased from 1072.7 SSM in 1981 to 1,545.0 SSM in 1982. Both Areas 9 and 10 showed very good spawnings compared to previous years, with Area 9 increasing from 2.9 SSM to 54.0 SSM, and Area 10 increasing from 13.9 SSM to 181.8 SSM in 1981 and 1982 respectively. Area 6 showed a slight drop in spawn from 490.1 SSM in 1981 to 423.9 SSM in 1982.

UPPER EAST COAST SUB-DISTRICTS (AREAS 11, 12)

Both Areas 11 and 12 continued to show a decline in spawn abundance with no spawn recorded in 1982 in Area 11, and with Area 12 dropping from 217.4 SSM in 1981 to 167.3 SSM in 1982.

MIDDLE EAST COAST SUB-DISTRICTS (AREAS 13, 14, 15, 16)

A total of 7,921.4 SSM of spawn were deposited in these herring sub-districts. This was a substantial improvement over 1981 when 3,327.8 SSM were deposited, and well above the 1979-81 average of 6,736.4 SSM. Area 14 showed the greatest increase going from 2,205.8 SSM in 1981 to 6,195.8 SSM in 1982. The northward shift in spawnings seems to be continuing, with Area 13 showing over double the spawn deposition observed in 1981. Areas 15 and 16 were showing improvement, but both remained below their 3-year averages.

LOWER EAST COAST SUB-DISTRICTS (AREAS 17, 18)

Although total spawnings in these sub-districts were well above the 1979-81 average, the bulk of the spawning was concentrated in the lower portion of Area 17 around Gabriola Passage and Coffin Point. No spawn was recorded at the head of Nanoose Bay this year. Area 18 remained very low and the 37.4 SSM of spawn deposited there were well below the 1979-81 average of 81.3 SSM.

LOWER WEST COAST VANCOUVER ISLAND SUB-DISTRICTS (AREAS 23, 24)

There was a dramatic decline in 1982 in spawn depositions in both Areas 23 and 24. In particular, Area 24 spawn deposition dropped from 1,792.9 SSM in 1981 to 168.6 SSM in 1982. The 1979-81 average for this area was 2,097.1 SSM. Fishery officers in Area 24 noted a sharp decline in vegetation in both the Yellow Bank and Elbow Bank areas. These areas have been the major spawning locations in past years but in 1982, very little spawn was observed there. Spawn depositions in Area 23, Barkley Sound, also decreased from 426.4 SSM in 1981 to 291.8 SSM in 1982. The 1979-81 average for this area was 804.0 SSM.

UPPER WEST COAST VANCOUVER ISLAND SUB-DISTRICTS (AREAS 25, 26, 27)

Area 25 showed a slight increase in spawn deposition in 1982, but was still well below the 1979-81 average of 2,314.0 SSM. All spawnings took place in Esperanza and Nuchatlitz Inlets and there was no recorded spawning in Nootka Sound either outside of Bajo Reef or inside of Cook Channel.

Spawnings in Area 27 were down from 1981. However, the 722.2 SSM of spawn recorded there did not include any spawn deposited in Klaskish Inlet. Although lengths and widths of spawnings were recorded in Klaskish Inlet, no egg densities or percentages of bare area were determined due to poor weather conditions. Fishery officers in this area felt that the spawnings in Klaskish Inlet were at least as good as in 1981.

Table 14. Summary of individual herring spawnings, B.C., 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 1, NORTH COAST Q.C.I.							
BAIN POINT	01/02	03/02	91	23	2	0.60	0.17
BAIN POINT	01/02	03/02	91	23	2	0.40	0.25
BAIN POINT	21/02	24/02	1645	23	1	0.50	0.95
COLNETT POINT	25/02	01/03	274	114	3	0.40	7.50
COLNETT POINT	25/02	01/03	640	23	1	0.70	0.22
DEEPWATER POINT	25/03	27/03	457	9	2	0.40	0.49
GERMANIA CREEK	25/02	01/03	2011	32	3	0.35	16.73
ISABELLA POINT	16/02	20/02	91	23	2	0.50	0.21
ISABELLA POINT	16/02	20/02	732	23	1	0.60	0.34
ISABELLA POINT	16/02	20/02	183	46	3	0.40	2.02
KUNLANA PT.	25/02	01/03	366	114	1	0.60	0.83
MARY PT.	21/02	24/02	548	23	1	0.50	0.32
OBSERVATORY PT.	16/02	20/02	229	69	3	0.40	3.79
OBSERVATORY PT.	16/02	20/02	1553	91	5	0.60	56.53
TWIN CREEK +	25/02	01/03	457	37	1	0.60	0.34
TWIN CREEK +	25/02	01/03	823	37	2	0.40	3.65
TWIN CREEK +	25/02	01/03	1280	46	3	0.30	16.49
AREA TOTAL			11471.				110.82
AREA: 2W, WEST COAST Q.C.I.							
CLAPP BASIN	28/03	28/03	457	9	3	0.20	1.32
CLAPP BASIN	28/03	28/03	640	5	5	0.25	2.40
CLONARD BAY	19/03	19/03	732	7	5	0.50	2.56
CLONARD BAY	19/03	19/03	914	18	7	0.30	21.88
CLONARD BAY	19/03	19/03	366	18	6	0.10	8.30
DAWSON HARBOUR	07/04	07/04	183	5	5	0.30	0.64
DAWSON HARBOUR	07/04	07/04	548	5	5	0.25	2.06
FLAMINGO INLET	15/03	16/03	296	10	2	0.20	0.47
FLAMINGO INLET	24/03	24/03	20	5	3	0.00	0.04
FLAMINGO INLET	15/03	16/03	1777	10	3	0.00	7.11
FLAMINGO INLET	15/03	16/03	494	296	2	0.15	24.86
INSKIP CHANNEL	05/04	05/04	2221	5	6	0.10	13.99
INSKIP CHANNEL	05/04	05/04	3948	5	6	0.10	24.87

Table 14 (cont'd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 2W, WEST COAST Q.C.I. CONTINUED							
INSKIP CHANNEL	05/04	05/04	49	5	5	0.00	0.25
INSKIP CHANNEL	05/04	05/04	99	10	6	0.00	1.39
INSKIP CHANNEL	05/04	05/04	395	198	3	0.00	31.28
INSKIP CHANNEL	05/04	05/04	395	25	5	0.00	9.88
INSKIP CHANNEL	05/04	05/04	444	10	3	0.00	1.78
INSKIP CHANNEL	05/04	05/04	593	5	6	0.00	4.15
LOUSCOONE INLET	06/03	06/03	691	5	5	0.50	1.73
LOUSCOONE INLET	01/04	01/04	548	183	6	0.40	84.24
LOUSCOONE INLET	06/03	06/03	395	29	5	0.20	9.16
LOUSCOONE INLET	07/03	07/03	494	10	4	0.30	2.25
LOUSCOONE INLET	06/03	06/03	395	10	4	0.20	2.05
LOUSCOONE INLET	06/03	06/03	395	10	4	0.15	2.18
LOUSCOONE INLET	06/03	06/03	395	10	3	0.00	1.58
OTARD BAY	27/03	29/03	274	18	6	0.20	5.52
OTARD BAY	27/03	29/03	274	14	6	0.20	4.30
OTARD BAY	27/03	29/03	366	18	6	0.20	7.38
OTARD BAY	27/03	29/03	457	18	6	0.20	9.21
PEEL INLET	05/04	05/04	20	5	5	0.00	0.10
PEEL INLET	05/04	05/04	1678	5	5	0.00	8.39
PORT CHANAL	02/04	02/04	183	6	5	0.20	0.88
PORT CHANAL	02/04	02/04	366	6	5	0.20	1.76
PORT CHANAL	02/04	02/04	732	6	5	0.20	3.51
PORT CHANAL	02/04	02/04	548	6	5	0.20	2.63
PORT CHANAL	05/03	07/03	6855	11	5	0.20	60.32
PORT LOUIS	05/03	07/03	366	183	5	0.20	53.58
PORT LOUIS	24/03	25/03	457	11	5	0.25	3.77
PORT LOUIS	24/03	25/03	366	18	5	0.25	4.94
PORT LOUIS	05/03	07/03	2742	7	4	0.25	9.36
PORT LOUIS	05/03	07/03	1828	9	4	0.25	8.02
PORT LOUIS	05/03	07/03	1828	9	5	0.25	12.34
PORT LOUIS	05/03	07/03	1462	9	4	0.25	6.41
PORT LOUIS	05/03	07/03	548	7	3	0.20	1.23
SEAL INLET	28/04	29/04	274	9	5	0.50	1.23
SEAL INLET	28/04	29/04	366	9	5	0.50	1.65
SEAL INLET	28/04	29/04	3199	9	4	0.25	14.04
SEAL INLET	28/04	29/04	732	23	4	0.20	8.75
SEAL INLET	28/04	29/04	823	9	5	0.50	3.70
SHIELDS BAY	28/03	28/03	366	7	3	0.30	0.72
SHIELDS BAY	28/03	28/03	410	8	4	0.20	1.71
TARTU INLET	27/03	28/03	914	5	3	0.20	1.46
AREA TOTAL			48442.				550.55

Table 14 (cont'd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 2, EAST COAST Q.C.I.							
ALDER ISLAND	24/03	24/03	914	18	5	0.15	13.98
ALDER ISLAND	24/03	24/03	457	9	3	0.75	0.41
BAG HARBOUR	21/03	25/03	137	46	5	0.00	6.30
BAG HARBOUR	21/03	25/03	274	9	5	0.10	2.22
BAG HARBOUR	21/03	25/03	1097	46	5	0.05	47.94
BEATTIE ANCHORAGE	06/04	06/04	457	14	3	0.20	2.05
BEATTIE POINT	16/06	16/06	46	5	4	0.10	0.13
BOLKUS ISLAND	07/03	08/03	366	18	4	0.40	2.57
BURNABY STRAIT	21/03	25/03	548	27	4	0.05	9.14
BURNABY STRAIT	21/03	25/03	274	27	5	0.05	7.03
CONGLOMERATE POINT	01/04	02/04	37	9	4	0.00	0.22
CONGLOMERATE POINT	01/04	02/04	548	30	5	0.05	15.62
CONGLOMERATE POINT	01/04	02/04	64	14	4	0.00	0.58
CONGLOMERATE POINT	01/04	02/04	1188	9	3	0.10	3.85
DOLOMITE NARROWS	01/04	01/04	1280	27	7	0.20	52.53
DOLOMITE NARROWS	01/04	01/04	1097	18	5	0.50	9.87
DOLOMITE NARROWS	01/04	01/04	640	37	7	0.10	40.49
DOLOMITE NARROWS	01/04	01/04	457	27	4	0.50	4.01
DOLOMITE NARROWS	01/04	01/04	640	18	6	0.30	11.29
FLOWERY ISLAND	15/05	18/05	548	183	5	0.30	70.20
FRANCIS BAY +	09/03	09/03	366	27	4	0.30	4.50
GEORGE BAY	21/03	25/03	274	18	4	0.05	3.05
GRASSY IS. (GILLATT IS.)	10/04	10/04	69	27	4	0.00	1.21
HAIDA POINT	14/05	14/05	46	18	6	0.10	1.04
HUSTON INLET	01/04	03/04	1645	14	3	0.20	7.37
HUSTON PT.	21/03	23/03	183	14	3	0.30	0.72
HUSTON PT.	21/03	23/03	1097	91	6	0.02	136.96
JEDWAY	24/03	25/03	183	18	5	0.10	2.96
JEDWAY	24/03	25/03	274	9	4	0.10	1.44
LAGOON INLET (HEAD)	04/04	04/04	1097	5	3	0.16	1.84
PELICAN POINT	07/03	08/03	1188	14	4	0.25	8.11
PELICAN POINT	07/03	08/03	1188	18	6	0.10	26.94
POOLE INLET	18/03	25/03	686	9	9	0.80	3.70
POOLE INLET	18/03	25/03	183	14	3	0.32	0.70
POOLE INLET	18/03	26/03	91	37	4	0.10	1.97
POOLE INLET	18/03	25/03	457	37	7	0.40	19.28
POOLE INLET	18/03	25/03	732	37	6	0.60	15.17
POOLE INLET	18/03	25/03	137	14	5	0.60	0.77
POOLE INLET	18/03	25/03	23	23	4	0.10	0.31
POOLE INLET	18/03	25/03	229	9	4	0.40	0.80

Table 14 (cont'd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 2, EAST COAST Q.C.I. CONTINUED							
POOLE INLET	18/03	25/03	1097	14	4	0.55	4.49
POOLE INLET	18/03	25/03	1371	14	4	0.40	7.49
POOLE INLET	18/03	25/03	9	9	2	0.00	0.02
POOLE INLET	18/03	25/03	548	27	6	0.55	9.32
POOLE INLET	18/03	26/03	46	18	5	0.05	0.79
POOLE INLET	18/03	26/03	183	37	4	0.50	2.20
POOLE INLET	18/03	25/03	9	69	4	0.25	0.30
POOLE INLET	18/03	25/03	457	27	5	0.40	7.40
POOLE INLET	18/03	25/03	229	4	6	0.60	0.51
POOLE INLET	18/03	25/03	457	5	7	0.78	0.96
POOLE INLET	18/03	25/03	46	18	7	0.05	1.49
POOLE INLET	18/03	25/03	914	46	5	0.20	33.64
POOLE INLET	18/03	25/03	183	46	8	0.15	17.17
POOLE INLET	18/03	25/03	1828	4	5	0.25	5.48
ROBBER ISLAND	21/05	22/05	91	5	2	0.40	0.05
SAW REEF	24/03	24/03	1828	37	5	0.83	11.50
SECTION COVE	24/03	24/03	548	27	5	0.20	11.84
SECTION COVE	24/03	24/03	366	46	6	0.23	18.15
SECTION COVE	24/03	24/03	914	27	5	0.65	8.64
SEDGWICK BAY	17/03	19/03	91	9	5	0.50	0.41
SEDGWICK BAY	17/03	19/03	183	14	5	0.30	1.79
SEDGWICK BAY	17/03	19/03	457	18	5	0.05	7.81
SEDGWICK BAY	17/03	19/03	914	27	7	0.15	39.85
SEDGWICK BAY	17/03	19/03	914	27	6	0.05	32.82
SEDGWICK BAY	17/03	19/03	183	18	5	0.20	2.64
SEDGWICK BAY	17/03	19/03	183	2	3	0.10	0.13
SEDGWICK BAY	17/03	19/03	274	27	6	0.10	9.32
SELWYN INLET	05/04	12/04	914	27	7	0.05	44.54
SELWYN INLET	05/04	12/04	914	46	7	0.10	71.90
SELWYN INLET	05/04	12/04	27	14	4	0.20	0.20
SELWYN INLET	05/04	12/04	457	32	6	0.05	19.45
SELWYN INLET	05/04	12/04	640	14	6	0.10	11.29
SELWYN INLET	05/04	12/04	1280	18	4	0.10	13.48
SELWYN INLET	05/04	12/04	274	9	5	0.30	1.73
SLIM INLET	21/03	25/03	69	14	5	0.20	0.77
SLIM INLET	21/03	25/03	4570	9	4	0.55	12.03
SLIM INLET	21/03	25/03	1097	18	5	0.20	15.80
SWAN BAY	07/03	08/03	731	27	3	0.10	7.11
SWAN BAY	07/03	08/03	2559	14	8	0.20	68.79
SWAN BAY	07/03	08/03	640	18	4	0.00	7.49
SWAN BAY	07/03	08/03	303	27	4	0.20	4.25
SWAN BAY	07/03	08/03	914	37	6	0.15	40.24
SWAN BAY	07/03	08/03	366	18	6	0.00	9.22
SWAN BAY	07/03	08/03	731	18	4	0.10	7.70
SWAN BAY	07/03	08/03	548	18	5	0.00	9.86

Table 14 (cont'd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 2, EAST COAST Q.C.I. CONTINUED							
SWAN BAY	07/03	08/03	123	37	5	0.00	4.55
SWAN BAY	07/03	08/03	366	27	5	0.05	9.39
SWAN BAY	07/03	08/03	914	18	5	0.10	14.81
SWAN BAY	07/03	08/03	731	9	3	0.30	1.84
SWAN BAY	07/03	08/03	366	46	5	0.20	13.47
SWAN BAY	07/03	08/03	731	27	7	0.05	35.63
SWAN BAY	07/03	08/03	366	37	4	0.00	8.80
SWAN BAY	07/03	08/03	410	27	6	0.20	12.40
TREE ISLAND (JEWELL IS.)	21/04	21/04	110	27	4	0.30	1.35
AREA TOTAL			56691.				1223.57
AREA: 3, NASS							
ALICE ARM	18/03	19/03	25	10	2	0.00	0.05
ALICE ARM	18/03	19/03	150	5	2	0.00	0.15
ALICE ARM	18/03	19/03	150	5	2	0.00	0.15
ALICE ARM	18/03	19/03	80	80	1	0.00	0.32
ALICE ARM	18/03	19/03	20	5	2	0.00	0.02
ALICE ARM	18/03	19/03	150	2	1	0.00	0.01
ALICE ARM	18/03	19/03	150	5	3	0.00	0.30
ALICE ARM	18/03	19/03	300	3	2	0.00	0.18
ALICE ARM	18/03	19/03	30	5	2	0.00	0.03
ALICE ARM	18/03	19/03	25	3	1	0.00	0.00
ALICE ARM	18/03	19/03	150	5	2	0.00	0.15
ALICE ARM	18/03	19/03	20	5	2	0.00	0.02
GRASSY POINT	27/03	31/03	600	10	4	0.00	3.90
GRASSY POINT	27/03	31/03	300	10	5	0.00	3.00
GRASSY POINT	27/03	31/03	300	10	3	0.00	1.20
GRASSY POINT	27/03	31/03	600	10	7	0.00	11.40
HASTINGS ARM	18/03	19/03	600	5	2	0.00	0.60
HASTINGS ARM	18/03	19/03	3499	1	2	0.00	0.70
HASTINGS ARM	18/03	19/03	1000	5	3	0.00	2.00
HASTINGS ARM	18/03	19/03	300	1	3	0.00	0.12
HASTINGS ARM	18/03	19/03	2499	1	2	0.00	0.50
STUMAUN BAY	27/03	31/03	50	5	5	0.10	0.22
STUMAUN BAY	27/03	31/03	300	5	3	0.40	0.36
STUMAUN BAY	27/03	31/03	200	20	4	0.10	2.34
STUMAUN BAY	27/03	31/03	100	15	3	0.25	0.45
AREA TOTAL			11598.				28.18

Table 14 (cont'd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 4, SKEENA							
BIG BAY	30/03	03/04	1999	150	1	0.50	7.50
BIG BAY	30/03	03/04	1600	150	6	0.15	285.60
BIG BAY	30/03	03/04	600	60	5	0.35	23.40
BIG BAY	30/03	03/04	500	100	3	0.25	15.00
BIG BAY	30/03	03/04	1399	25	5	0.20	27.98
BIG BAY	30/03	03/04	1199	40	5	0.40	28.78
BURNT CLIFF ISLAND	30/03	03/04	600	50	6	0.20	33.60
BURNT CLIFF ISLAND	30/03	03/04	500	100	5	0.20	40.00
BURNT CLIFF ISLAND	30/03	03/04	800	30	4	0.30	10.92
FLAT TOP ISLETS	30/03	03/04	899	20	5	0.10	16.18
MIST ISLAND	30/03	03/04	300	10	4	0.20	1.56
MIST ISLAND	30/03	03/04	600	20	5	0.20	9.60
OTTER ANCHORAGE	30/03	03/04	500	30	6	0.25	15.75
OTTER ANCHORAGE	30/03	03/04	1600	30	5	0.15	40.80
PEARL HARBOUR	30/03	03/04	250	30	5	0.10	6.75
PEARL HARBOUR	30/03	03/04	1899	40	5	0.20	60.77
PEARL HARBOUR	30/03	03/04	500	40	5	0.10	18.00
SOUTH ISLAND	30/03	03/04	800	30	6	0.10	30.24
SOUTH ISLAND	30/03	03/04	600	200	4	0.30	54.60
AREA TOTAL			17145.				727.02
AREA: 5, GRENVILLE-PRINCIPE							
ABSALOM ISLAND	14/04	14/04	91	5	3	0.30	0.13
BILLY ISLANDS	18/04	18/04	137	27	4	0.10	2.16
BILLY ISLANDS	18/04	18/04	91	18	4	0.10	0.96
BILLY ISLANDS	18/04	18/04	201	18	4	0.10	2.12
BILLY ISLANDS	18/04	18/04	110	18	5	0.05	1.88
CAMP CREEK	20/03	21/03	137	46	7	0.10	10.78
CAPE GEORGE	09/04	12/04	914	46	3	0.10	15.14
DRIES INLET	16/03	21/03	1280	137	4	0.30	79.79
FREEMAN PASSAGE	05/04	07/04	137	18	8	0.10	5.33
FREEMAN PASSAGE	05/04	07/04	91	18	7	0.10	2.80
FREEMAN PASSAGE	06/04	09/04	137	9	4	0.05	0.76

Table 14 (cont'd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 5, GRENVILLE-PRINCIPE CONTINUED							
FREEMAN PASSAGE	06/04	09/04	69	9	5	0.05	0.59
FREEMAN PASSAGE	05/04	07/04	183	23	9	0.05	12.00
FREEMAN PASSAGE	05/04	07/04	64	18	9	0.10	3.11
FREEMAN PASSAGE	06/04	08/04	548	110	6	0.05	80.17
FREEMAN PASSAGE	05/04	07/04	46	14	6	0.15	0.77
FREEMAN PASSAGE	06/04	09/04	457	18	5	0.10	7.40
FREEMAN PASSAGE	05/04	07/04	91	9	6	0.10	1.03
FREEMAN PASSAGE	05/04	07/04	69	18	9	0.10	3.35
FREEMAN PASSAGE	06/04	09/04	274	14	5	0.10	3.45
FREEMAN PASSAGE	07/04	10/04	219	18	4	0.10	2.31
GURD ISLAND	04/04	04/04	183	23	6	0.20	4.71
KITKATLA CREEK	20/03	21/03	366	37	5	0.05	12.86
KITKATLA CREEK	20/03	21/03	640	46	6	0.05	39.16
KITKATLA INLET	16/03	16/03	366	18	7	0.05	11.89
KITKATLA INLET	16/03	16/03	91	9	7	0.05	1.48
KITKATLA INLET	16/03	16/03	548	14	7	0.05	13.85
NESS ISLANDS	04/04	06/04	594	27	7	0.10	27.42
NESS ISLANDS	04/04	06/04	366	9	4	0.15	1.82
NESS ISLANDS	04/04	06/04	366	5	4	0.10	1.07
NESS ISLANDS	04/04	06/04	594	6	3	0.10	1.28
NESS ISLANDS	04/04	06/04	548	4	3	0.20	0.70
NESS ISLANDS	04/04	06/04	183	9	3	0.10	0.59
PORCHER NARROWS	23/03	23/03	110	37	4	0.05	2.51
PORCHER NARROWS	23/03	23/03	91	27	7	0.10	4.20
AREA TOTAL			10392.				359.58
AREA: 6, BUTEDALE							
BENT HARBOR	18/03	18/03	82	18	4	0.30	0.67
BENT HARBOR	18/03	18/03	352	9	3	0.15	1.08
BENT HARBOR	10/03	12/03	155	50	4	0.10	4.53
BENT HARBOR	10/03	18/03	105	27	5	0.05	2.69
BENT HARBOR	18/03	18/03	146	23	4	0.25	1.64
DUFFY CREEK	18/03	18/03	503	14	4	0.15	3.89
DUFFY CREEK	18/03	18/03	119	32	5	0.20	3.05
HIGGINS PASSAGE	28/03	28/03	754	14	6	0.05	14.04
HIGGINS PASSAGE	28/03	30/03	2925	18	6	0.15	62.65
HIGGINS PASSAGE	28/03	30/03	411	9	4	0.20	1.92
HIGGINS PASSAGE	28/03	30/03	1005	12	3	0.25	3.62

Table 14 (contd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 6, BUTEDALE	CONTINUED						
HIGGINS PASSAGE	21/03	21/03	457	9	5	0.10	3.70
HIGGINS PASSAGE	21/03	21/03	686	9	4	0.20	3.21
HIGGINS PASSAGE	28/03	03/04	46	9	3	0.30	0.12
HIGGINS PASSAGE	28/03	28/03	1508	14	6	0.15	25.12
HIGGINS PASSAGE	28/03	03/04	91	18	4	0.40	0.64
HIGGINS PASSAGE	28/03	03/04	274	5	3	0.30	0.38
HIGGINS PASSAGE	28/03	30/03	1508	12	4	0.20	9.41
KETTLE INLET	14/03	15/03	667	14	5	0.25	7.00
KETTLE INLET	14/03	15/03	836	5	3	0.30	1.17
KETTLE INLET	14/03	15/03	27	18	5	0.05	0.46
KETTLE INLET	14/03	15/03	292	7	6	0.20	2.29
KITASU BAY	16/03	16/03	160	18	4	0.30	1.31
NOBLE LAGOON	10/03	12/03	585	9	4	0.15	2.91
NOBLE LAGOON	10/03	12/03	169	16	6	0.30	2.65
NOBLE LAGOON	10/03	12/03	416	34	5	0.10	12.73
NOBLE LAGOON	10/03	12/03	841	9	3	0.10	2.72
NOBLE LAGOON	10/03	12/03	585	21	6	0.15	14.62
PARSONS ANCHORAGE	08/03	10/03	1371	5	4	0.40	2.67
PARSONS ANCHORAGE	08/03	08/03	274	91	4	0.60	6.48
PARSONS ANCHORAGE	10/03	15/03	2376	14	4	0.40	12.97
PARSONS ANCHORAGE	19/03	22/03	69	46	6	0.25	3.33
PARSONS ANCHORAGE	10/03	14/03	731	37	6	0.20	30.29
PARSONS ANCHORAGE	09/03	13/03	594	23	6	0.15	16.26
PARSONS ANCHORAGE	09/03	16/03	2130	37	5	0.20	63.05
PARSONS ANCHORAGE	09/03	11/03	640	69	5	0.50	22.08
WEETEEAM BAY	10/03	12/03	302	55	5	0.20	13.29
WEETEEAM BAY	10/03	12/03	110	9	4	0.25	0.48
WEETEEAM BAY	10/03	12/03	251	67	5	0.10	15.14
WEETEEAM BAY	10/03	12/03	110	50	5	0.20	4.40
WEETEEAM BAY	10/03	12/03	101	25	4	0.15	1.40
WEETEEAM BAY	10/03	12/03	361	69	5	0.20	19.93
WEETEEAM BAY	10/03	12/03	503	14	3	0.30	1.97
WILBY POINT	16/03	20/03	1965	9	4	0.40	6.90
WILBY POINT	18/03	23/03	1600	14	4	0.55	6.55
WILBY POINT	18/03	23/03	46	5	3	0.20	0.07
WILBY POINT	20/03	23/03	548	5	4	0.20	1.42
WILBY POINT	20/03	23/03	183	5	6	0.25	0.96
WILBY POINT	19/03	22/03	1005	9	4	0.50	2.94
WILBY POINT	20/03	23/03	457	5	4	0.25	1.11
AREA TOTAL			31432.				423.94

Table 14 (cont'd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 7, BELLA BELLA							
BEND PT.	19/03	23/03	418	46	6	0.10	24.23
BEND PT.	19/03	23/03	418	29	6	0.10	15.27
BERRY INLET	23/03	25/03	1921	10	6	0.00	26.89
BERRY INLET	23/03	25/03	480	3	4	0.00	0.94
BERRY INLET	23/03	25/03	1275	10	6	0.00	17.85
BERRY INLET	23/03	25/03	480	3	6	0.00	2.02
BERRY INLET	23/03	25/03	1726	5	6	0.15	10.27
BLAIR INLET	23/03	25/03	167	3	3	0.00	0.20
BOAT INLET	25/03	28/03	460	25	6	0.20	12.88
BOAT INLET	25/03	28/03	627	25	6	0.20	17.56
BODDY PASSAGE/NARROWS	26/03	04/04	1337	8	7	0.00	20.32
CAPE MARK	20/03	01/04	146	84	6	0.30	12.02
CAPE MARK	20/03	01/04	502	17	7	0.30	11.35
CAPE MARK	20/03	01/04	502	8	7	0.30	5.34
CAPE MARK	20/03	01/04	167	13	7	0.30	2.89
CAPE MARK	20/03	01/04	543	29	7	0.30	20.94
CAPE MARK	20/03	01/04	21	8	7	0.30	0.22
CAPE MARK	20/03	04/04	84	42	6	0.00	4.94
CAPE MARK	20/03	01/04	3760	63	7	0.30	315.05
CAPE MARK	20/03	01/04	250	63	7	0.30	20.95
CAPE MARK	20/03	01/04	376	33	7	0.30	16.50
CAPE MARK	20/03	01/04	146	125	7	0.30	24.27
CAPE MARK	20/03	01/04	751	17	7	0.30	16.98
CAPE MARK	20/03	01/04	250	42	7	0.30	13.97
CAPE MARK	20/03	01/04	334	125	6	0.30	40.92
CAPE MARK	20/03	01/04	100	13	7	0.30	1.73
CECILIA ISLAND	23/03	29/03	1288	5	5	0.00	6.44
CECILIA ISLAND	23/03	29/03	1119	4	5	0.00	4.48
CECILIA ISLAND	25/03	28/03	751	17	5	0.10	11.49
CECILIA ISLAND	25/03	28/03	151	13	6	0.15	2.34
CROSS PT.	19/03	23/03	643	49	5	0.40	18.90
DON PENINSULA	23/03	29/03	1091	20	5	0.00	21.82
DON PENINSULA	23/03	29/03	273	5	5	0.00	1.37
DON PENINSULA	23/03	29/03	643	10	0	0.10	0.00
DON PENINSULA	23/03	29/03	965	10	0	0.00	0.00
EVENING ISLET	25/03	27/03	192	8	5	0.00	1.54
HURRICANE ISLAND	04/04	10/04	188	3	5	0.00	0.56
HURRICANE ISLAND	04/04	10/04	42	2	4	0.00	0.05
HURRICANE ISLAND	04/04	10/04	481	3	6	0.00	2.02
HURRICANE ISLAND	04/04	10/04	63	3	3	0.00	0.08

Table 14 (cont'd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 7, BELLA BELLA CONTINUED							
HURRICANE ISLAND	04/04	10/04	167	42	4	0.00	4.56
HURRICANE ISLAND	04/04	10/04	188	42	6	0.00	11.05
HURRICANE ISLAND	04/04	10/04	21	2	3	0.00	0.02
HURRICANE ISLAND	04/04	10/04	162	3	3	0.00	0.19
HURRICANE ISLAND	04/04	10/04	105	3	7	0.00	0.60
HURRICANE ISLAND	04/04	10/04	1253	2	5	0.00	2.51
HURRICANE ISLAND	04/04	10/04	146	3	6	0.00	0.61
KING COVE	20/03	24/03	711	63	6	0.20	50.17
KING COVE	20/03	24/03	84	25	3	0.30	0.59
KING COVE	20/03	24/03	84	4	5	0.20	0.27
KING COVE	20/03	24/03	13	4	2	0.20	0.01
LADY DOUGLAS IS.	23/03	29/03	1119	4	5	0.50	2.24
LADY TRUTCH PASS	23/03	29/03	909	10	6	0.00	12.73
LADY TRUTCH PASS	23/03	29/03	1217	5	3	0.50	1.22
LAKE ISLAND	23/03	29/03	182	5	5	0.00	0.91
LAKE ISLAND	23/03	29/03	749	50	8	0.20	71.90
LAKE ISLAND	23/03	29/03	637	40	4	0.00	16.56
LAKE ISLAND	23/03	29/03	909	40	5	0.00	36.36
LANG PT.	19/03	23/03	25	8	4	0.50	0.06
LANG PT.	19/03	23/03	460	67	7	0.20	46.85
LEIGHTON ISLAND	23/03	29/03	1288	10	8	0.00	30.91
LEIGHTON ISLAND	23/03	29/03	137	5	4	0.00	0.45
MATHIESON CHANNEL	23/03	29/03	1610	10	5	0.50	8.05
MCNAUGHTON GROUP	01/04	07/04	736	8	5	0.00	5.89
MCNAUGHTON GROUP	01/04	07/04	1176	13	7	0.00	29.05
MCNAUGHTON GROUP	01/04	07/04	1029	13	6	0.00	18.73
MCNAUGHTON GROUP	25/03	27/03	334	42	3	0.00	5.61
MCNAUGHTON GROUP	01/04	07/04	441	8	5	0.00	3.53
OLIVER COVE	25/03	28/03	1068	8	6	0.00	11.96
PRINCESS ALICE ISLAND	26/03	04/04	250	17	4	0.00	2.76
PRINCESS ALICE ISLAND	26/03	04/04	711	84	6	0.00	83.61
PRINCESS ALICE ISLAND	26/03	04/04	167	17	6	0.00	3.97
PRINCESS ALICE ISLAND	26/03	04/04	585	29	7	0.00	32.23
PRINCESS ALICE ISLAND	26/03	04/04	376	50	8	0.00	45.12
REID PASSAGE	25/03	28/03	134	4	7	0.00	1.02
REID PASSAGE	23/03	29/03	643	5	5	0.00	3.21
SEAFORTH CHANNEL	25/03	27/03	217	8	5	0.00	1.74
SEAFORTH CHANNEL	25/03	27/03	192	4	4	0.00	0.50
SEAFORTH CHANNEL	25/03	27/03	1003	25	5	0.20	20.06
SEAFORTH CHANNEL	25/03	27/03	125	8	5	0.00	1.00
SEAFORTH CHANNEL	25/03	27/03	376	8	5	0.00	3.01
SEAFORTH CHANNEL	25/03	27/03	159	17	8	0.00	6.49
SPITFIRE CHANNEL	29/03	03/04	55	3	3	0.00	0.07
SPITFIRE CHANNEL	06/04	12/04	42	3	6	0.00	0.18
SPITFIRE ISLAND	25/03	27/03	50	5	3	0.00	0.10

Table 14 (cont'd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 7, BELLA BELLA CONTINUED							
SPITFIRE ISLAND	25/03	27/03	25	5	3	0.00	0.05
SPITFIRE ISLAND	25/03	27/03	50	5	3	0.00	0.10
SPITFIRE ISLAND	25/03	27/03	84	12	3	0.00	0.40
STRYKER BAY	04/04	08/04	334	17	6	0.00	7.95
STRYKER BAY	04/04	08/04	314	8	6	0.00	3.52
STRYKER BAY	20/03	24/03	1000	5	4	0.00	3.25
THOMPSON BAY (HEAD)	26/03	04/04	230	29	8	0.00	16.01
THOMPSON BAY (HEAD)	26/03	04/04	502	4	6	0.00	2.81
THOMPSON BAY (HEAD)	26/03	04/04	1087	17	8	0.00	44.35
THOMPSON BAY (HEAD)	26/03	04/04	585	33	8	0.00	46.33
THOMPSON BAY (HEAD)	26/03	04/04	2794	17	8	0.00	114.00
AREA TOTAL			54181.				1544.98
AREA: 8, BELLA COOLA							
ILLAHIE INLET	27/03	01/04	634	10	9	0.15	16.17
ILLAHIE INLET	27/03	01/04	180	5	6	0.10	1.13
ILLAHIE INLET	27/03	01/04	590	5	7	0.00	5.61
ILLAHIE INLET	01/04	04/04	1000	2	4	0.25	0.97
ILLAHIE INLET	27/03	01/04	230	3	6	0.20	0.77
ILLAHIE INLET	27/03	01/04	590	4	7	0.10	4.04
KEITH ANCHORAGE	04/04	08/04	409	5	4	0.00	1.33
KEITH ANCHORAGE	04/04	08/04	320	20	4	0.00	4.16
KEITH ANCHORAGE	04/04	08/04	135	5	3	0.00	0.27
KEITH ANCHORAGE	04/04	08/04	739	90	4	0.00	43.23
KEITH ANCHORAGE	04/04	08/04	385	5	4	0.00	1.25
KEITH ANCHORAGE	04/04	08/04	650	50	3	0.00	13.00
KEITH ANCHORAGE	04/04	08/04	500	5	4	0.00	1.63
KWAKSHUA CHANNEL	04/04	08/04	200	10	6	0.00	2.80
KWAKSHUA CHANNEL	04/04	08/04	205	10	2	0.00	0.41
NORTH BENTINCK ARM	15/03	20/03	545	10	2	0.00	1.09
NORTH BENTINCK ARM	15/03	20/03	775	15	3	0.25	3.49
NORTH BENTINCK ARM	15/03	20/03	730	1	1	0.50	0.02
NORTH BENTINCK ARM	15/03	20/03	115	3	2	0.50	0.03
NORTH BENTINCK ARM	15/03	20/03	365	3	3	0.10	0.39
NORTH BENTINCK ARM	15/03	20/03	180	2	1	0.50	0.01
NORTH BENTINCK ARM	15/03	20/03	1679	1	1	0.50	0.04
PRUTH BAY	04/04	08/04	450	10	4	0.00	2.92
PRUTH BAY	04/04	08/04	650	200	4	0.00	84.50

Table 14 (cont'd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 8, BELLA COOLA CONTINUED							
PRUTH BAY	04/04	08/04	160	5	4	0.00	0.52
PRUTH BAY	04/04	08/04	180	10	2	0.00	0.36
PRUTH BAY	04/04	08/04	70	5	2	0.00	0.07
PRUTH BAY	04/04	08/04	100	5	2	0.00	0.10
AREA TOTAL			12766.				190.32
AREA: 9, RIVERS INLET							
KILBELLA BAY	10/03	13/03	741	4	2	0.10	0.53
RIVERS INLET-HEAD	10/03	13/03	2871	2	2	0.50	0.57
RIVERS INLET-HEAD	10/03	13/03	914	99	2	0.65	6.33
RIVERS INLET-HEAD	10/03	13/03	361	186	3	0.40	16.12
RIVERS INLET-HEAD	10/03	13/03	3698	2	2	0.30	1.04
RIVERS INLET-HEAD	10/03	13/03	813	175	2	0.65	9.96
RIVERS INLET-HEAD	10/03	13/03	732	133	3	0.50	19.47
AREA TOTAL			10130.				54.02
AREA: 10, SMITH INLET							
ANCHOR BIGHT	24/03	27/03	1005	18	4	0.25	8.82
DRY CREEK	28/03	29/03	200	2	2	0.60	0.03
GREAVES ISLAND	26/03	28/03	1100	25	7	0.15	44.41
GREAVES ISLAND	26/03	28/03	1689	50	6	0.15	100.50
INDIAN ISLAND	24/03	28/03	1899	25	4	0.20	24.69
INDIAN ISLAND	26/03	28/03	230	45	3	0.40	2.48
LEROY BAY	27/03	28/03	180	3	2	0.40	0.06
SMITH INLET (HEAD)	06/04	08/04	1049	3	3	0.50	0.63
SMITH INLET (HEAD)	01/04	02/04	200	3	2	0.60	0.05
SMITH INLET (HEAD)	06/04	08/04	150	3	3	0.50	0.09
AREA TOTAL			7702.				181.76

Table 14 (cont'd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 12, ALERT BAY							
CLIO CHANNEL	03/04	03/04	91	9	4	0.40	0.32
CLIO CHANNEL	03/04	03/04	46	4	5	0.25	0.14
CLIO CHANNEL	03/04	03/04	457	9	5	0.50	2.06
CLIO CHANNEL	03/04	03/04	23	3	5	0.25	0.05
CLIO CHANNEL	03/04	03/04	23	7	3	0.25	0.05
KNIGHT INLET	28/03	28/03	137	2	1	0.20	0.01
KNIGHT INLET	17/03	17/03	3290	2	5	0.15	5.59
KNIGHT INLET	17/03	17/03	3656	18	6	0.20	73.70
KNIGHT INLET	20/03	20/03	686	5	4	0.10	2.01
MINK PT.	03/04	03/04	55	3	4	0.30	0.08
MINK PT.	03/04	03/04	91	23	5	0.25	1.57
WAHKASH CREEK	28/03	28/03	91	2	3	0.20	0.06
WAHKASH CREEK	28/03	28/03	18	7	3	0.10	0.05
WAHKASH CREEK	28/03	28/03	6764	1	3	0.60	1.08
WAHKASH CREEK	28/03	28/03	3656	3	3	0.20	3.51
WAHKASH CREEK	28/03	28/03	2375	4	4	0.20	4.94
WAHKASH CREEK	28/03	28/03	1828	1	4	0.20	0.95
WAHKASH CREEK	28/03	28/03	183	3	3	0.25	0.16
WAHKASH CREEK	28/03	28/03	82	4	3	0.20	0.10
WAHSHIHLAS BAY	15/03	20/03	2742	6	5	0.10	14.81
WAHSHIHLAS BAY	20/03	20/03	4570	9	5	0.10	37.02
WAKEMAN SOUND	16/03	17/03	1553	4	3	0.20	1.99
WAKEMAN SOUND	17/03	17/03	183	2	2	0.60	0.03
WAKEMAN SOUND	17/03	17/03	366	1	3	0.30	0.10
WAKEMAN SOUND	16/03	17/03	1462	3	3	0.50	0.88
WAKEMAN SOUND	16/03	17/03	845	3	3	0.50	0.51
WAKEMAN SOUND	17/03	17/03	366	3	3	0.30	0.31
WAKEMAN SOUND	16/03	17/03	640	2	2	0.40	0.15
WAKEMAN SOUND	02/04	02/04	3656	3	5	0.30	7.68
WAKEMAN SOUND	16/03	17/03	1280	3	4	0.30	1.75
WAKEMAN SOUND	02/04	02/04	183	2	4	0.40	0.14
WAKEMAN SOUND	02/04	02/04	457	3	5	0.30	0.96
WAKEMAN SOUND	02/04	02/04	548	3	4	0.40	0.64
WAKEMAN SOUND	17/03	17/03	183	2	3	0.60	0.06
WAKEMAN SOUND	16/03	17/03	1805	3	3	0.40	1.30
WAKEMAN SOUND	16/03	17/03	868	2	5	0.40	1.04
WAKEMAN SOUND	17/03	17/03	183	1	2	0.50	0.02
WAKEMAN SOUND	16/03	17/03	1531	4	3	0.40	1.47
AREA TOTAL			46973.				167.27

Table 14 (cont'd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 13, QUATHIASKI							
BELLS BAY	31/03	31/03	300	10	2	0.70	0.18
BELLS BAY	31/03	31/03	100	5	3	0.75	0.05
BELLS BAY	31/03	31/03	200	100	1	0.90	0.10
CAPE MUDGE	13/03	18/03	2450	180	6	0.40	370.44
DEEPWATER BAY	08/04	08/04	150	15	3	0.60	0.36
DEEPWATER BAY	08/04	08/04	150	30	6	0.10	5.67
DEEPWATER BAY	08/04	08/04	600	5	5	0.90	0.30
DEEPWATER BAY	08/04	08/04	150	15	4	0.30	1.02
DEEPWATER BAY	08/04	08/04	200	15	3	0.80	0.24
FRANCISCO POINT	13/03	18/03	3649	25	6	0.45	70.24
HAMILTON PT.	21/03	21/03	100	3	3	0.50	0.06
HAMILTON PT.	22/03	22/03	1799	3	4	0.90	0.35
HYACINTHE BAY	28/03	30/03	20	15	6	0.10	0.38
HYACINTHE BAY	28/03	30/03	150	40	6	0.30	5.88
HYACINTHE BAY	28/03	30/03	100	30	6	0.40	2.52
HYACINTHE BAY	31/03	31/03	40	15	5	0.60	0.24
HYACINTHE BAY	28/03	30/03	700	4	3	0.90	0.11
HYACINTHE BAY	28/03	30/03	30	10	7	0.40	0.34
HYACINTHE BAY	21/03	21/03	100	50	4	0.10	2.92
PURCELL PT.	23/03	23/03	3998	4	6	0.90	2.24
ROCKY ISLETS	31/03	31/03	250	15	4	0.50	1.22
TEAQUAHAN RIVER	22/03	22/03	300	50	4	0.20	7.80
WADDINGTON HARBOUR	16/03	16/03	50	25	2	0.30	0.17
WADDINGTON HARBOUR	23/03	23/03	600	3	3	0.20	0.58
WADDINGTON HARBOUR	23/03	23/03	50	15	4	0.10	0.44
WADDINGTON HARBOUR	20/03	20/03	100	6	5	0.20	0.48
WADDINGTON HARBOUR	23/03	23/03	800	6	6	0.90	0.67
WADDINGTON HARBOUR	16/03	16/03	30	20	3	0.10	0.22
WADDINGTON HARBOUR	21/03	21/03	100	100	4	0.50	3.25
WADDINGTON HARBOUR	21/03	21/03	100	25	3	0.40	0.60
WADDINGTON HARBOUR	16/03	16/03	25	25	2	0.30	0.09
WARD PT.	23/03	23/03	3799	4	5	0.90	1.52
AREA TOTAL			21190.				480.69
AREA: 14, COMOX							
BOYLE POINT	02/03	02/03	1000	15	5	0.40	9.00

Table 14 (cont'd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 14, COMOX	CONTINUED						
CAPE LAZO	04/03	04/03	1499	75	6	0.60	62.96
CAPE LAZO	24/03	24/03	1600	100	5	0.60	64.00
CAPE LAZO	04/03	04/03	1000	100	4	0.75	16.25
CAPE LAZO	04/03	04/03	600	25	4	0.70	2.93
CAPE LAZO	02/03	04/03	6997	10	3	0.75	7.00
CAPE LAZO	04/03	04/03	100	50	5	0.75	1.25
CAPE LAZO	04/03	04/03	350	50	5	0.70	5.25
CAPE LAZO	12/03	12/03	100	100	6	0.60	5.60
COMOX HARBOUR	18/03	18/03	899	300	1	0.75	3.37
COMOX HARBOUR	18/03	18/03	600	749	3	0.50	89.88
COMOX HARBOUR	18/03	19/03	500	250	2	0.75	6.25
DEEP BAY	05/03	05/03	600	20	7	0.50	11.40
DENMAN ISLAND	01/03	01/03	100	50	2	0.60	0.40
DENMAN ISLAND	06/03	06/03	600	10	5	0.60	2.40
DENMAN ISLAND	06/03	06/03	2499	25	5	0.50	31.24
DENMAN ISLAND	06/03	06/03	1000	10	5	0.70	3.00
FILLONGLEY PARK	28/02	05/03	3499	500	5	0.70	524.85
FILLONGLEY PARK	28/02	06/03	600	20	5	0.70	3.60
FILLONGLEY PARK	28/02	05/03	500	20	4	0.60	2.60
FRENCH CREEK	20/03	29/03	1799	200	8	0.10	777.17
FRENCH CREEK	19/03	24/03	500	110	5	0.20	44.00
FRENCH CREEK	20/03	29/03	1000	180	8	0.10	388.80
KOMAS BLUFF	26/02	08/03	1999	75	4	0.40	58.47
KOMAS BLUFF	26/02	08/03	1999	75	4	0.60	38.98
LITTLE QUALICUM RIVER	23/03	23/03	2800	170	7	0.05	859.18
LITTLE QUALICUM RIVER	23/03	23/03	875	50	3	0.50	8.75
MAPLEGUARD PT.	05/03	06/03	1999	100	7	0.20	303.85
MAPLEGUARD PT.	05/03	06/03	1000	100	4	0.20	52.00
NILE CREEK	05/03	06/03	1399	60	5	0.40	50.36
NILE CREEK	05/03	07/03	950	110	6	0.30	102.41
NILE CREEK	05/03	07/03	1349	100	4	0.30	61.38
NILE CREEK	05/03	06/03	4848	120	7	0.20	884.28
NILE CREEK	05/03	06/03	250	50	6	0.10	15.75
PARKSVILLE BAY	22/03	29/03	2200	250	8	0.10	1188.00
PARKSVILLE BAY	22/03	29/03	500	200	5	0.30	70.00
QUALICUM RIVER	23/03	23/03	1900	60	2	0.50	11.40
QUALICUM RIVER	05/03	07/03	900	110	6	0.30	97.02
RATHTREVOR BEACH	05/03	06/03	1600	150	6	0.10	302.40
SEAL ISLETS	15/03	15/03	100	50	2	0.60	0.40
WILLEMAR BLUFF	24/03	24/03	700	75	3	0.75	5.25
WILLEMAR BLUFF	08/03	08/03	399	75	7	0.60	22.74
AREA TOTAL			55709.				6195.81

Table 14 (cont'd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 15, WESTVIEW							
ATREVIDA REEF	07/03	08/03	2103	46	4	0.50	31.44
ATREVIDA REEF	06/03	08/03	1371	114	5	0.20	125.04
ATREVIDA REEF	07/03	16/03	457	183	7	0.00	158.90
EMMONDS BEACH	07/03	10/03	914	27	5	0.30	17.27
HARWOOD ISLAND	11/03	16/03	548	91	3	0.00	19.95
HARWOOD ISLAND	11/03	16/03	1202	91	4	0.00	71.10
KIDDIE PT.(TEXADA IS.)	17/03	20/03	740	20	3	0.00	5.92
SCUTTLE BAY	01/03	05/03	411	206	5	0.00	84.67
SLIAMMON VILLAGE	05/03	11/03	1645	91	4	0.10	87.57
SLIAMMON VILLAGE	01/03	05/03	2742	183	6	0.10	632.25
AREA TOTAL			12133.				1234.10
AREA: 16, PENDER HARBOUR							
PORPOISE BAY	03/04	03/04	600	150	3	0.70	10.80
AREA TOTAL			600.				10.80
AREA: 17, NANAIMO							
BLUNDEN POINT	04/03	04/03	3729	306	3	0.65	159.75
BLUNDEN POINT	03/04	03/05	3206	448	3	0.50	287.26
BOAT HARBOUR	10/03	10/03	1138	273	3	0.10	111.84
BREAKWATER ISLAND	28/02	10/03	184	65	7	0.10	20.45
COFFIN POINT (IS.)	10/03	13/03	2401	177	7	0.35	524.85
FRASER POINT	08/03	09/03	1569	177	7	0.15	448.51
GABRIOLA IS. (N. SHORE)	10/03	11/03	4051	184	3	0.10	268.34
ICARUS POINT	08/03	11/03	3593	252	3	0.20	289.74
KULLEET BAY	26/03	26/03	1500	68	3	0.40	24.48

Table 14 (contd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 17, NANAIMO	CONTINUED						
KULLEET BAY	26/03	26/03	546	205	3	0.15	38.06
AREA TOTAL			21917.				2173.27
AREA: 18, COWICHAN							
ANNETTE INLET	28/02	28/02	120	20	0	0.75	0.00
ANNETTE INLET	09/03	09/03	50	30	1	0.75	0.02
ANNETTE INLET	09/03	09/03	50	50	0	0.75	0.00
ANNETTE PT.	09/03	09/03	60	20	1	0.25	0.04
BOOT COVE	25/03	25/03	300	20	4	0.25	2.92
BOOT COVE	26/03	26/03	100	20	4	0.75	0.32
BOOT COVE	25/03	25/03	100	40	4	0.25	1.95
CHAIN ISLANDS	09/03	09/03	50	25	2	0.50	0.13
CHAIN ISLANDS	09/03	09/03	30	20	2	0.50	0.06
GANGES HARBOUR	22/03	22/03	120	35	2	0.35	0.55
GANGES HARBOUR	15/03	15/03	1499	60	3	0.25	26.98
GANGES HARBOUR	16/03	16/03	100	30	2	0.60	0.24
GLENTHORNE PASSAGE	28/02	28/02	100	20	0	0.75	0.00
WELBURY BAY	10/03	10/03	50	10	2	0.25	0.08
WELBURY BAY	09/03	09/03	250	30	3	0.50	1.50
WELBURY BAY	26/03	26/03	150	30	4	0.50	1.46
WELBURY BAY	10/03	10/03	50	40	4	0.50	0.65
WELBURY BAY	10/03	10/03	80	20	4	0.50	0.52
AREA TOTAL			3259.				37.42
AREA: 23, BARKLEY SOUND							
BEG ISLANDS	08/03	08/03	350	5	5	0.33	1.17
DAVID ISLAND	08/03	10/03	2399	20	6	0.33	45.01
DAVID ISLAND	08/03	10/03	1000	15	7	0.33	19.10
DUTCH HARBOUR	29/03	30/03	600	3	6	0.33	1.69
EQUIS BEACH	29/03	30/03	2449	30	5	0.33	49.22
FORBES ISLAND	08/03	10/03	2898	20	6	0.33	54.37

Table 14 (cont'd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE START	SPAWNED END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 23, BARKLEY SOUND CONTINUED							
FORBES ISLAND	08/03	10/03	1100	10	7	0.33	14.00
HILLIER ISLAND	24/03	24/03	1170	3	2	0.33	0.47
HILLIER ISLAND	24/03	24/03	749	10	1	0.33	0.25
HILLIER ISLAND	24/03	24/03	500	5	3	0.33	0.67
LYALL POINT	29/03	30/03	549	30	5	0.33	11.03
MAGGIE RIVER	08/03	10/03	1300	20	8	0.33	41.81
MAGGIE RIVER	08/03	10/03	600	10	7	0.33	7.64
MAGGIE RIVER	08/03	10/03	500	5	7	0.33	3.18
MAGGIE RIVER	08/03	10/03	1499	20	6	0.33	28.12
MAYNE BAY	24/03	24/03	700	10	5	0.33	4.69
SPRING COVE	22/03	22/03	500	5	6	0.33	2.35
TOQUART BAY	08/03	10/03	200	5	4	0.33	0.44
TOQUART BAY	08/03	10/03	749	10	4	0.33	3.26
TOQUART BAY	24/03	24/03	600	10	3	0.33	1.61
TOQUART BAY	08/03	10/03	650	10	3	0.33	1.74
AREA TOTAL			21062.				291.81
AREA: 24, CLAYOQUOT SOUND							
BASEBALL COVE +	12/03	12/03	23	6	4	0.00	0.09
BECK ISLAND	09/03	09/03	274	11	6	0.20	3.38
BECK ISLAND	09/03	09/03	55	5	6	0.30	0.27
BECK ISLAND	09/03	09/03	91	18	4	0.20	0.85
BECK ISLAND	09/03	09/03	37	4	2	0.10	0.03
BECK ISLAND	09/03	09/03	64	3	4	0.30	0.09
FELICE ISLAND	08/03	08/03	183	91	3	0.60	2.66
FELICE ISLAND	08/03	08/03	274	91	6	0.40	20.94
HOOTLA KOOTLA +	05/03	05/03	64	5	4	0.10	0.19
HOOTLA KOOTLA +	05/03	05/03	229	6	6	0.00	1.92
HOOTLA KOOTLA +	05/03	05/03	46	4	5	0.40	0.11
HOOTLA KOOTLA +	05/03	05/03	46	5	4	0.10	0.13
HOOTLA KOOTLA +	05/03	05/03	37	4	4	0.10	0.09
HOOTLA KOOTLA +	05/03	05/03	69	4	6	0.50	0.19
HOOTLA KOOTLA +	05/03	05/03	37	9	3	0.40	0.08
HOOTLA KOOTLA +	05/03	05/03	91	9	5	0.00	0.82
HOOTLA KOOTLA +	05/03	05/03	37	14	3	0.40	0.12
MEARES ISLAND	08/03	08/03	91	9	6	0.40	0.69
MEARES ISLAND	08/03	08/03	137	46	5	0.70	1.89
RITCHIE BAY	31/03	31/03	366	2	7	0.00	1.39

Table 14 (contd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 24, CLAYOQUOT SOUND CONTINUED							
RITCHIE BAY	31/03	31/03	23	5	7	0.00	0.22
RITCHIE BAY	31/03	31/03	37	4	5	0.00	0.15
RITCHIE BAY	31/03	31/03	23	5	6	0.00	0.16
RITCHIE BAY	31/03	31/03	73	3	6	0.25	0.23
RITCHIE BAY	31/03	31/03	137	9	6	0.50	0.86
RITCHIE BAY	31/03	31/03	64	5	5	0.00	0.32
ROBERT POINT	08/03	08/03	64	6	3	0.25	0.12
ROBERT POINT	08/03	08/03	9	3	5	0.00	0.03
ROBERT POINT	08/03	08/03	64	7	6	0.30	0.44
STOCKHAM ISLAND	09/03	09/03	137	9	4	0.10	0.72
STOCKHAM ISLAND	09/03	09/03	23	1	3	0.20	0.01
STOCKHAM ISLAND	09/03	09/03	14	4	3	0.30	0.02
STOCKHAM ISLAND	09/03	09/03	73	27	4	0.30	0.90
STOCKHAM ISLAND	09/03	09/03	91	1	3	0.20	0.03
STOCKHAM ISLAND	09/03	09/03	23	6	2	0.10	0.02
STOCKHAM ISLAND	09/03	09/03	32	1	3	0.20	0.01
STOCKHAM ISLAND	09/03	09/03	27	1	3	0.30	0.01
STOCKHAM ISLAND	09/03	09/03	137	64	5	0.20	7.01
STONE ISLAND	09/03	09/03	548	5	4	0.30	1.25
STONE ISLAND	09/03	09/03	64	5	4	0.30	0.15
STUBBS ISLAND	08/03	08/03	274	91	4	0.20	12.97
STUBBS ISLAND	08/03	08/03	227	114	4	0.40	10.09
STUBBS ISLAND	08/03	08/03	229	137	4	0.50	10.20
STUBBS ISLAND	08/03	08/03	320	137	5	0.40	26.30
VARGAS ISLAND	08/03	08/03	91	37	4	0.40	1.31
VARGAS ISLAND	08/03	08/03	548	114	5	0.50	31.24
VARGAS ISLAND	08/03	08/03	37	18	4	0.50	0.22
VARGAS ISLAND	09/03	09/03	64	46	6	0.00	4.12
VARGAS ISLAND	08/03	08/03	183	114	4	0.50	6.78
VARGAS ISLAND	09/03	09/03	7	3	4	0.00	0.01
VARGAS ISLAND	09/03	09/03	46	37	4	0.40	0.66
VARGAS ISLAND	09/03	09/03	23	9	4	0.30	0.09
VARGAS ISLAND	08/03	08/03	366	114	4	0.60	10.85
WHITESAND COVE	10/03	10/03	229	14	9	0.60	3.85
WHITESAND COVE	10/03	10/03	183	14	3	0.25	0.77
WICKANINNISH ISLAND	08/03	08/03	69	27	2	0.25	0.28
WICKANINNISH ISLAND	08/03	08/03	55	5	7	0.50	0.26
WICKANINNISH ISLAND	08/03	08/03	9	4	5	0.50	0.02
WICKANINNISH ISLAND	08/03	08/03	5	3	9	0.00	0.05
AREA TOTAL			6879.				168.64

Table 14 (cont'd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 25, NOOTKA SOUND							
INNER NUCHATLITZ	07/03	10/03	415	415	2	0.10	31.00
INNER NUCHATLITZ	07/03	10/03	100	100	4	0.00	6.50
INNER NUCHATLITZ	07/03	10/03	600	50	3	0.30	8.40
INNER NUCHATLITZ	07/03	10/03	450	75	8	0.30	56.70
INNER NUCHATLITZ	07/03	10/03	280	100	4	0.20	14.56
INNER NUCHATLITZ	07/03	10/03	430	90	6	0.40	32.51
INNER NUCHATLITZ	07/03	10/03	200	100	6	0.00	28.00
INNER NUCHATLITZ	07/03	10/03	100	50	2	0.00	1.00
INNER NUCHATLITZ	07/03	10/03	409	180	3	0.20	23.56
INNER NUCHATLITZ	07/03	10/03	520	100	7	0.30	69.16
INNER NUCHATLITZ	07/03	10/03	500	120	4	0.10	35.10
INNER NUCHATLITZ	07/03	10/03	150	150	2	0.20	3.60
INNER NUCHATLITZ	07/03	10/03	330	140	4	0.60	12.01
OUTER NUCHATLITZ	07/03	10/03	180	150	3	0.30	7.56
OUTER NUCHATLITZ	07/03	10/03	150	239	4	0.30	16.31
OUTER NUCHATLITZ	07/03	10/03	800	200	4	0.40	62.40
OUTER NUCHATLITZ	07/03	10/03	200	200	3	0.40	9.60
OUTER NUCHATLITZ	07/03	10/03	1100	110	1	0.30	4.24
OUTER NUCHATLITZ	07/03	10/03	630	120	8	0.10	163.30
OUTER NUCHATLITZ	07/03	10/03	180	120	6	0.50	15.12
PORT LANGFORD	05/03	09/03	130	60	5	0.10	7.02
PORT LANGFORD	05/03	09/03	300	75	3	0.30	6.30
PORT LANGFORD	05/03	09/03	120	50	4	0.20	3.12
PORT LANGFORD	05/03	09/03	300	80	5	0.40	14.40
PORT LANGFORD	05/03	09/03	1249	20	4	0.30	11.37
PORT LANGFORD	05/03	09/03	420	100	6	0.10	52.92
PORT LANGFORD	05/03	09/03	200	20	2	0.30	0.56
PORT LANGFORD	05/03	09/03	200	20	3	0.30	1.12
PORT LANGFORD	05/03	09/03	230	20	6	0.30	4.51
PORT LANGFORD	05/03	09/03	180	50	5	0.20	7.20
ROSA ISLAND	13/03	15/03	180	40	3	0.30	2.02
ROSA ISLAND	13/03	15/03	130	50	3	0.20	2.08
ROSA ISLAND	13/03	15/03	120	60	3	0.40	1.73
ROSA ISLAND	13/03	15/03	180	50	5	0.40	5.40
AREA TOTAL			11663.				720.36

Table 14 (cont'd). HERRING SPAWNING SUMMARY TABLE FOR 1982.

SPAWNING GROUND	DATE SPAWNED START	END	LENGTH M.	WIDTH M.	CALCULATED INTENSITY	EST. BARE AREA	STD.SQ. M. (1000'S)
AREA: 27, QUATSINO SOUND							
FORWARD INLET	12/03	12/03	914	229	5	0.10	188.38
FORWARD INLET	10/03	11/03	640	91	6	0.05	77.46
FORWARD INLET	12/03	12/03	229	91	7	0.05	37.61
FORWARD INLET	09/03	09/03	457	183	7	0.05	150.95
FORWARD INLET	11/03	11/03	91	18	5	0.00	1.64
GREENWOOD POINT	11/03	11/03	914	183	5	0.05	158.90
HALL BANK	10/03	10/03	183	91	5	0.00	16.65
HAZARD POINT	11/03	11/03	457	73	4	0.10	19.52
KLASKISH INLET	10/03	10/03	91	46	5	0.05	3.98
KLASKISH INLET	03/03	08/03	914	91	0	0.00	0.00
KLASKISH INLET	10/03	10/03	457	46	0	0.00	0.00
KLASKISH INLET	12/03	12/03	91	23	0	0.00	0.00
KLASKISH INLET	10/03	13/03	1828	23	0	0.00	0.00
KLASKISH INLET	06/03	06/03	91	46	0	0.00	0.00
KLASKISH INLET	05/03	06/03	91	91	0	0.00	0.00
KLASKISH INLET	05/03	05/03	183	46	0	0.00	0.00
KLASKISH INLET	10/03	10/03	914	91	0	0.00	0.00
KLASKISH INLET	11/03	11/03	320	23	0	0.00	0.00
KLASKISH INLET	08/03	08/03	730	23	0	0.00	0.00
KLASKISH INLET	12/03	12/03	914	23	0	0.00	0.00
KLASKISH INLET	11/03	11/03	1097	9	0	0.00	0.00
KLASKISH INLET	11/03	11/03	366	91	0	0.00	0.00
LEESON HARBOUR	05/03	05/03	91	23	0	0.00	0.00
LEESON HARBOUR	10/03	10/03	548	46	7	0.10	43.11
LEESON HARBOUR	10/03	10/03	46	46	5	0.00	2.12
NORTH HARBOUR	10/03	10/03	457	46	4	0.05	12.98
	09/03	09/03	229	46	4	0.00	6.85
	14/03	14/03	91	23	5	0.00	2.09
AREA TOTAL			13434.				722.23

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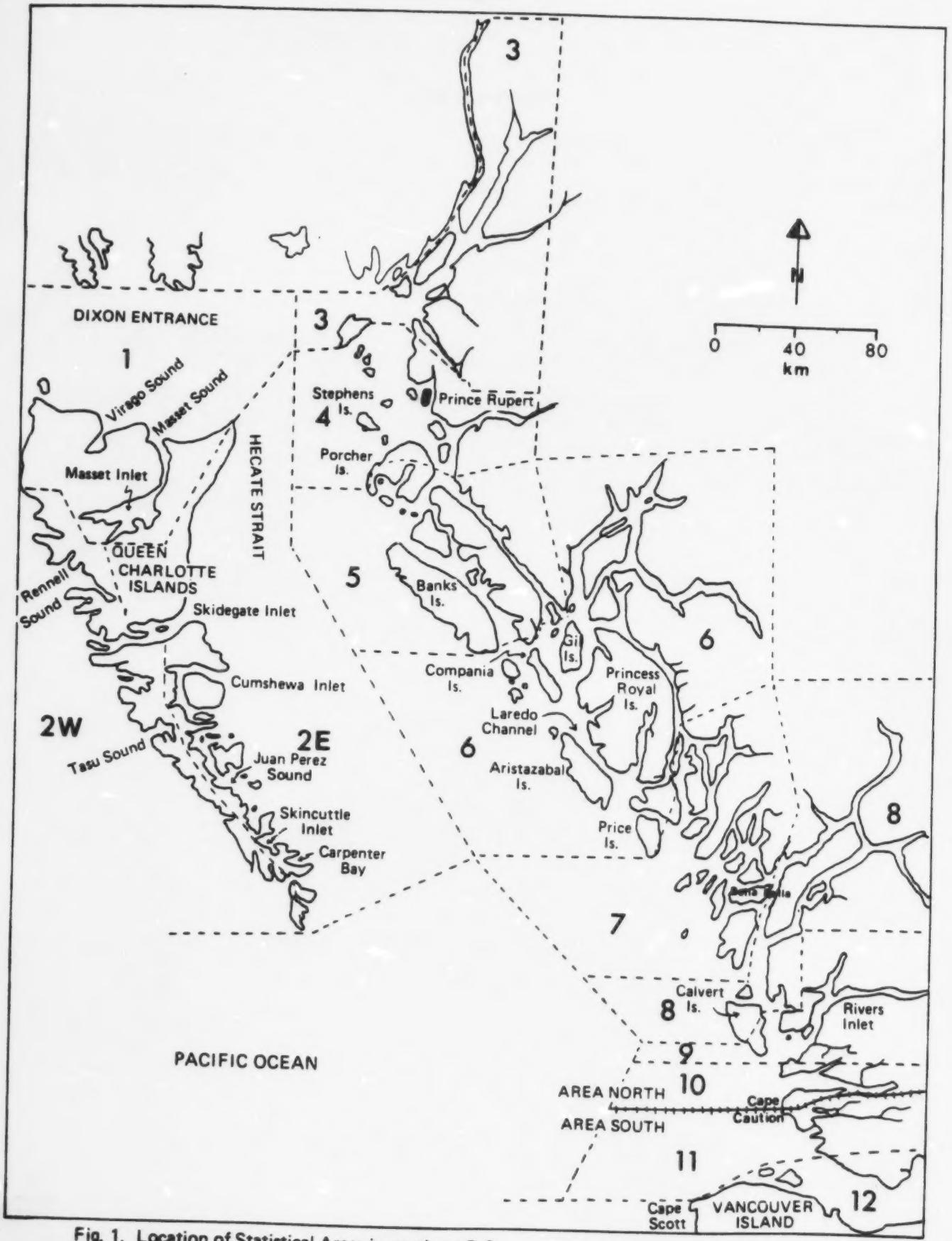

Fig. 1. Location of Statistical Areas in northern B.C.

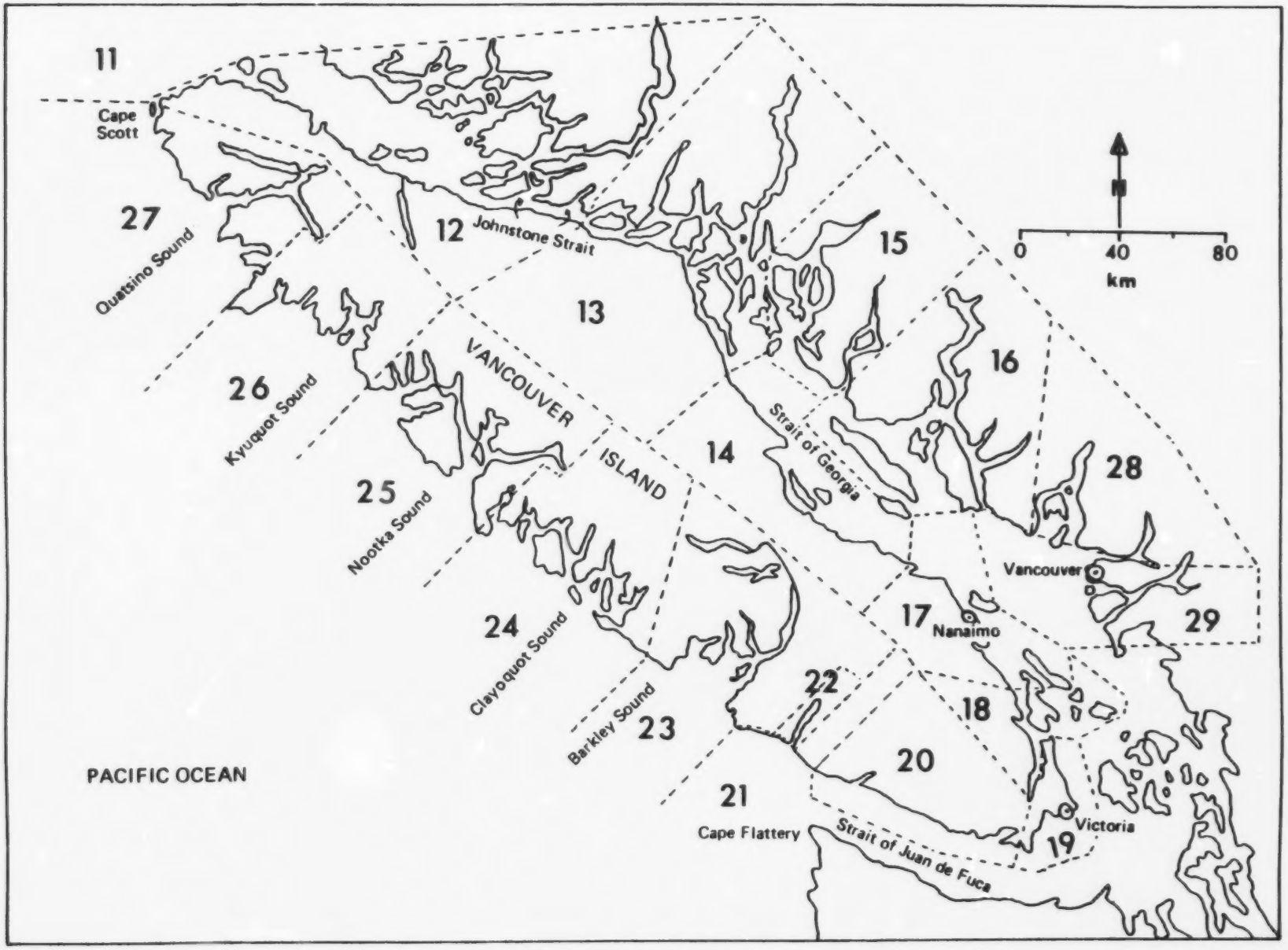

Fig. 2. Location of Statistical Areas in southern B.C.

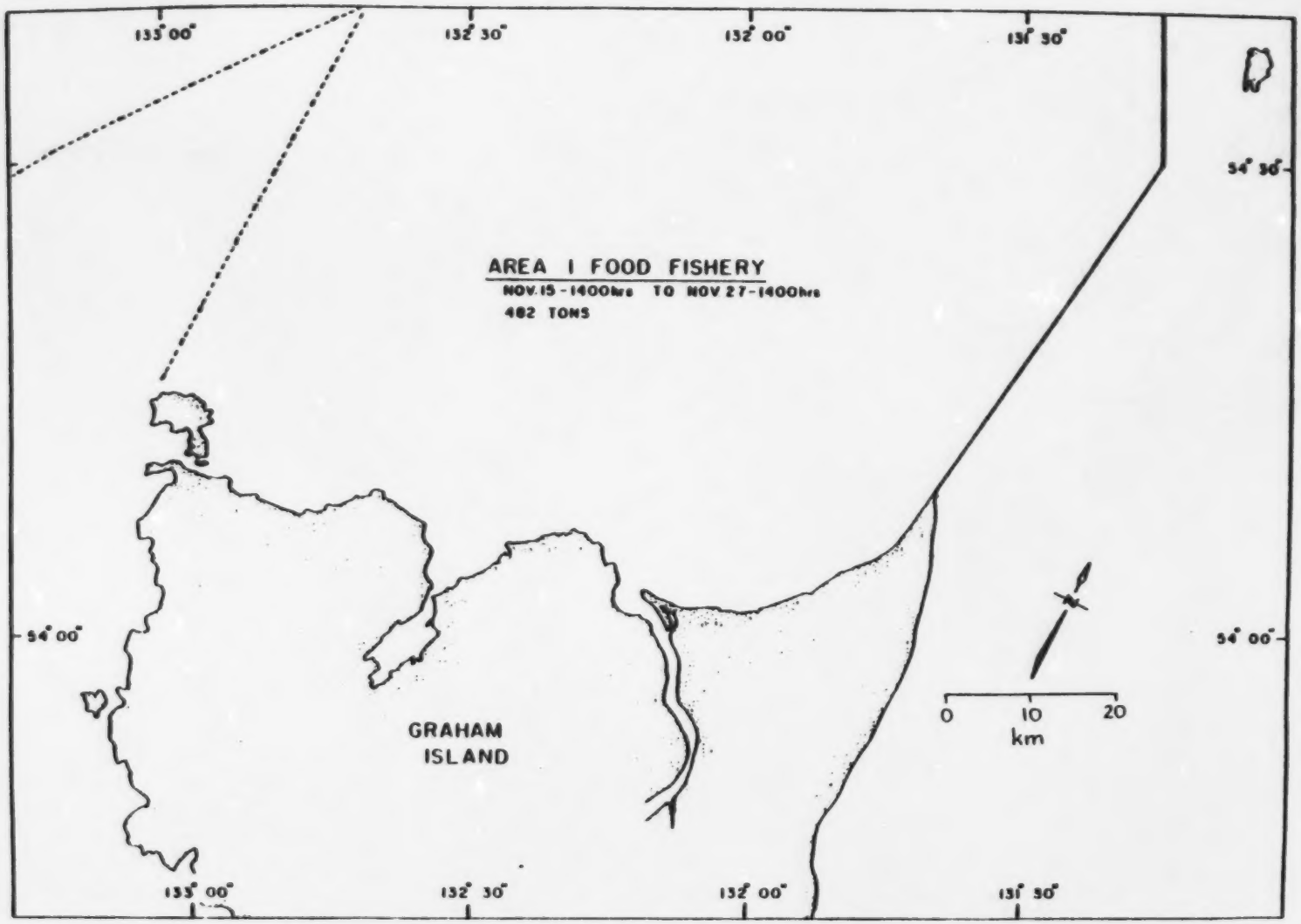

Fig. 3a. Herring food and bait fishing boundaries and catches in Area 1, 1981.

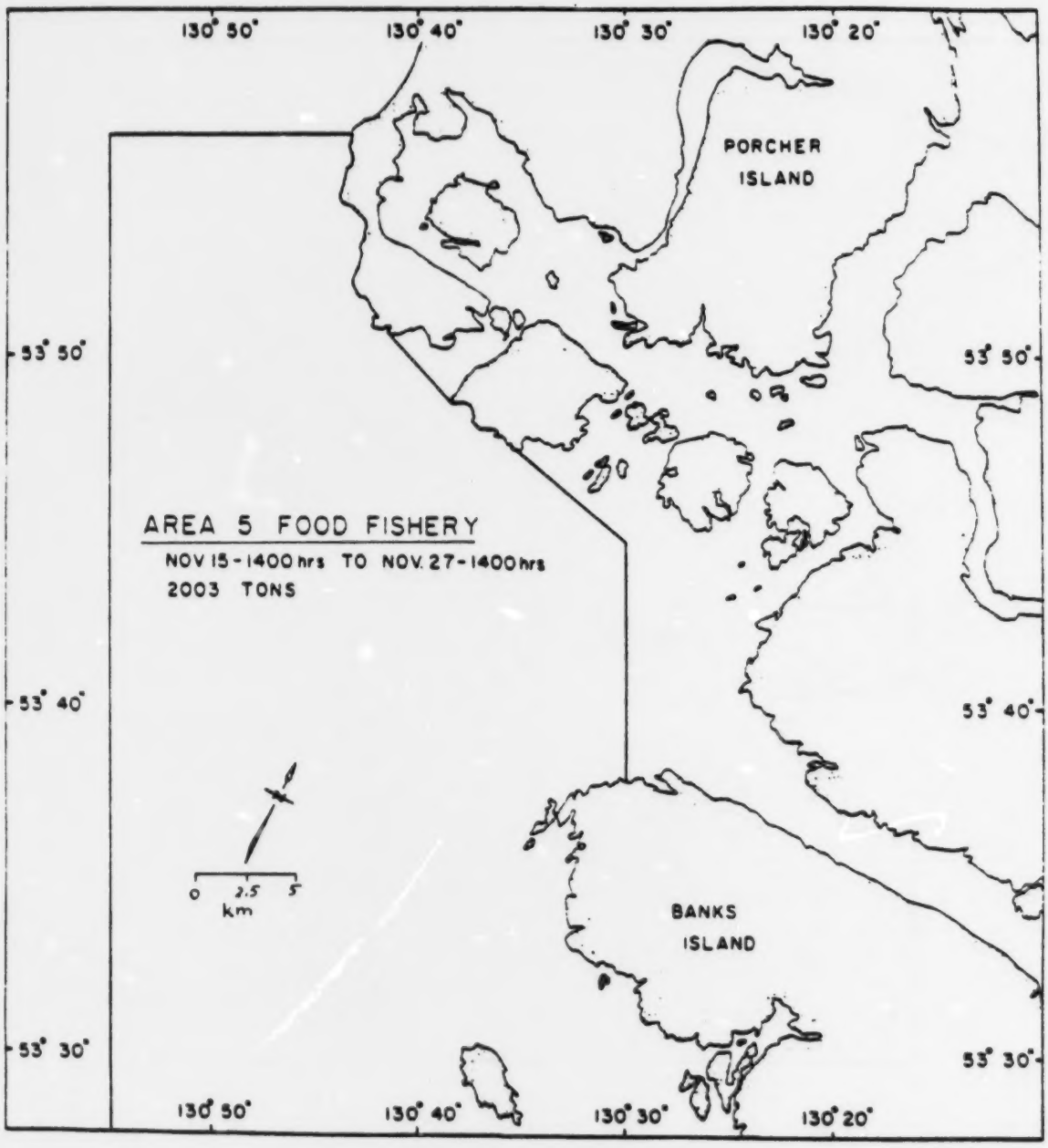

Fig. 3b. Herring food and bait fishing boundaries and catches in Area 5, 1981.

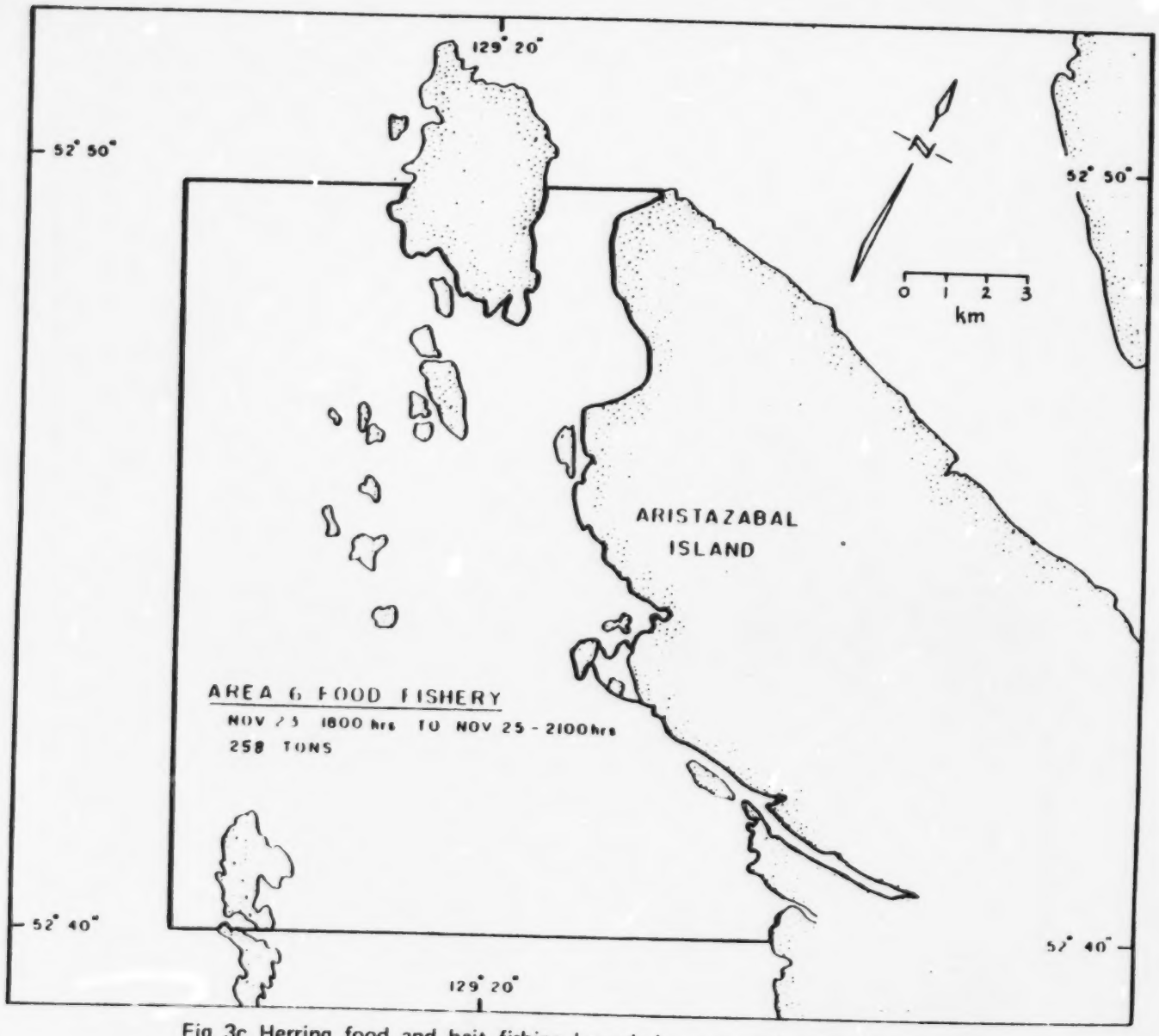

Fig. 3c. Herring food and bait fishing boundaries and catches in Area 6, 1981.

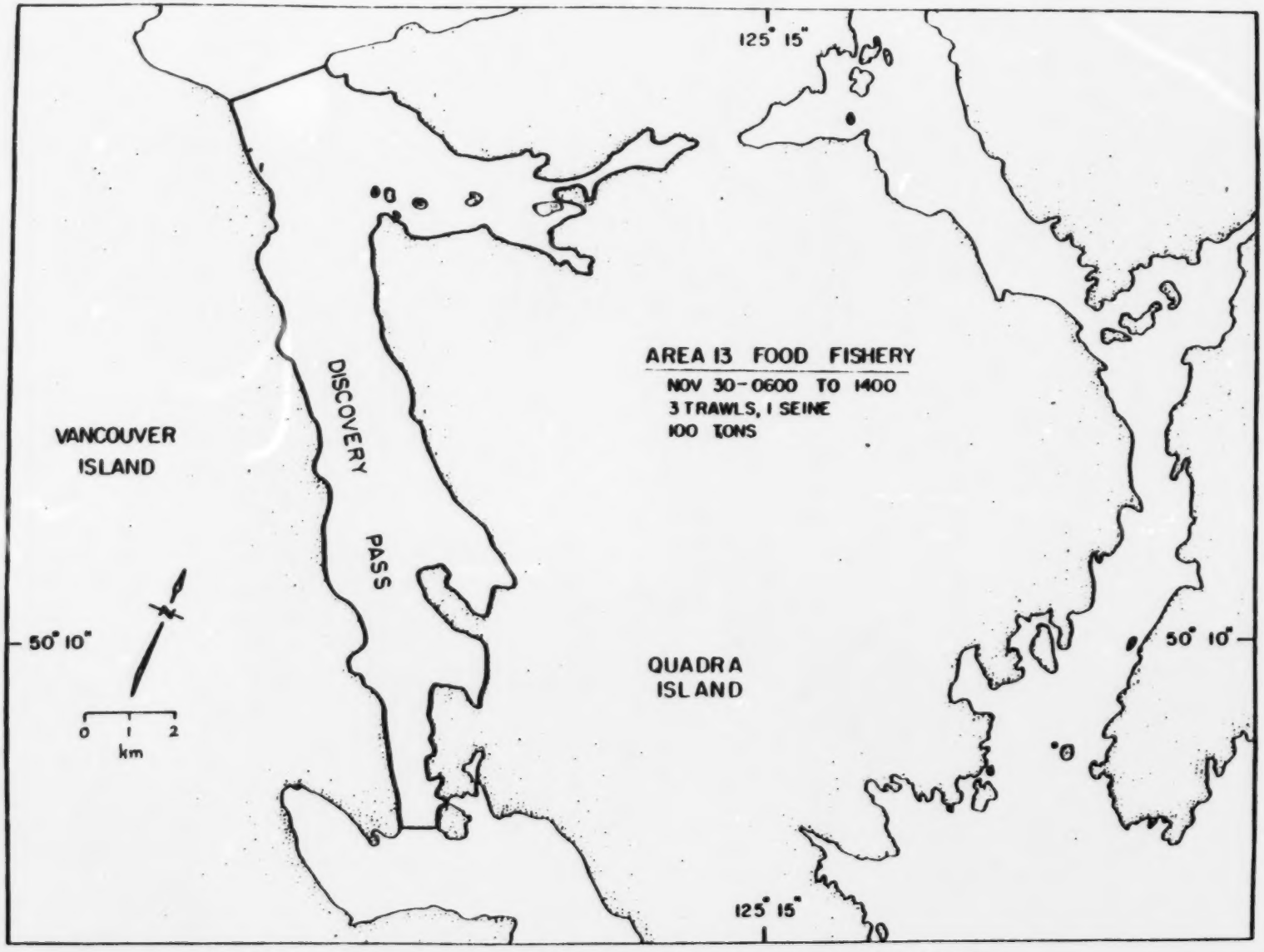

Fig. 3d. Herring food and bait fishing boundaries and catches in Area 13, 1981.

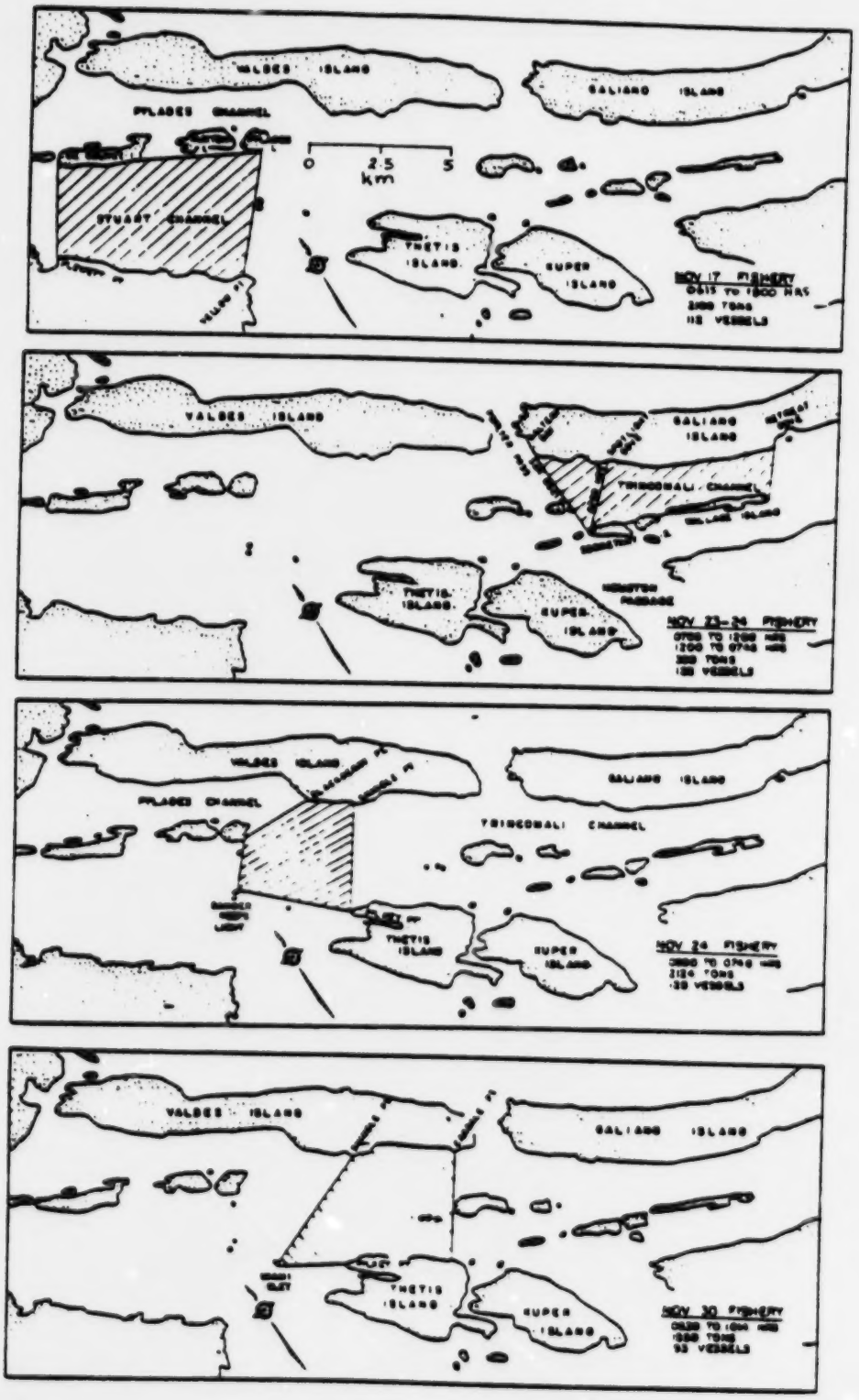

Fig. 3e. Herring food and bait fishing boundaries and catches in Area 17, 1981.

AREA 2E ROE HERRING FISHERY

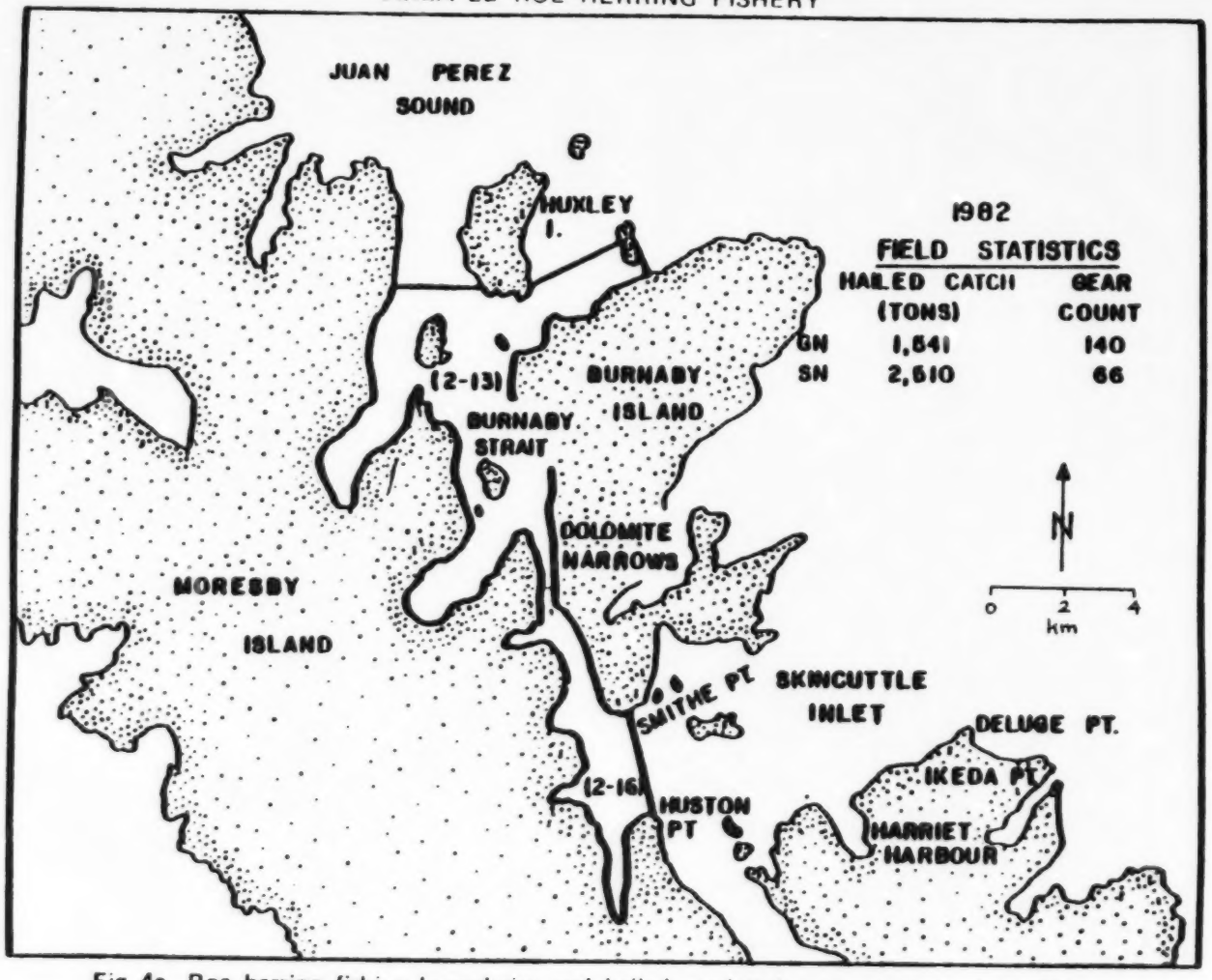

Fig. 4a. Roe herring fishing boundaries and hailed catches by gear type in Area 2E, Juan Perez Sound - Skincuttle Inlet, 1982.

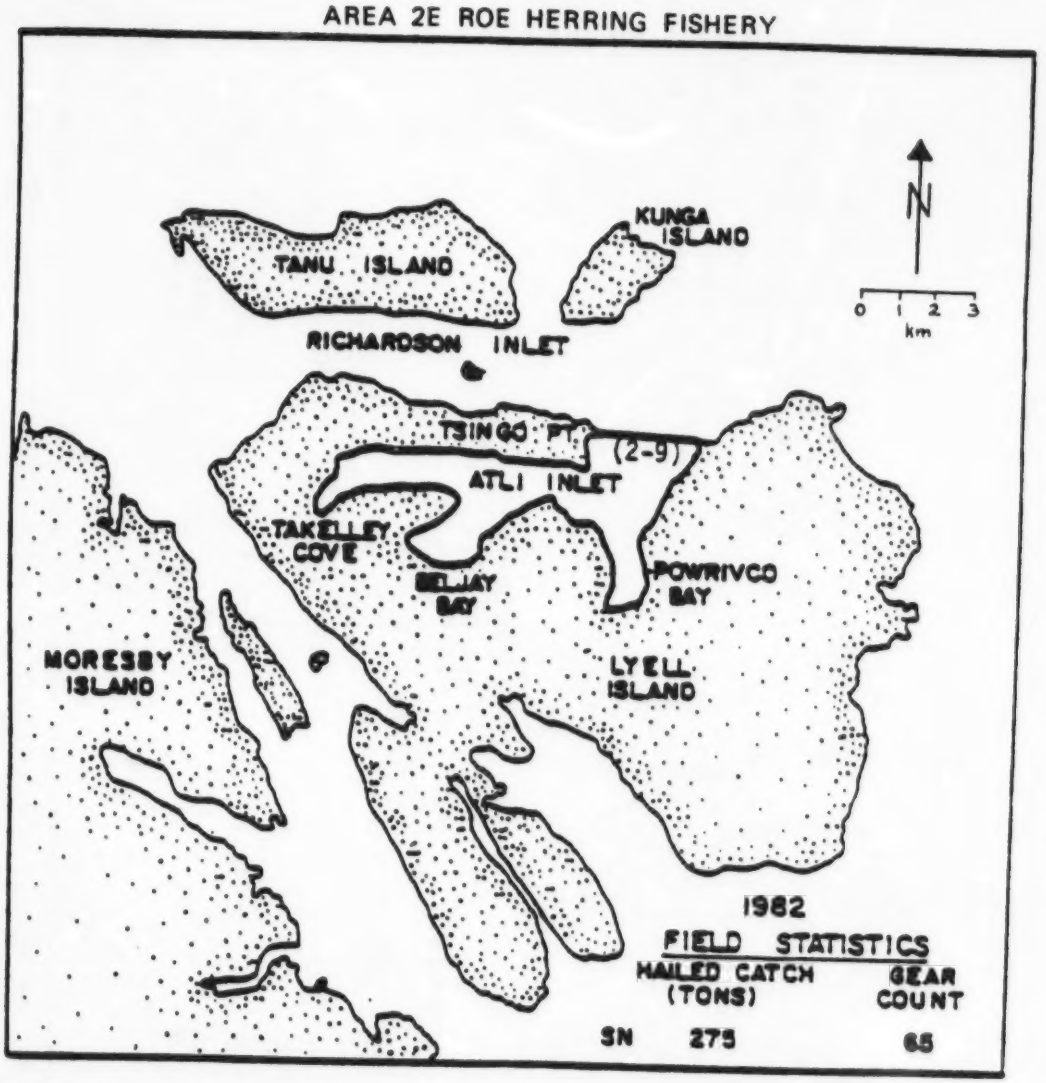

Fig. 4b. Roe herring fishing boundaries and hailed catches by gear type in Area 2E, Atli Inlet, 1982.

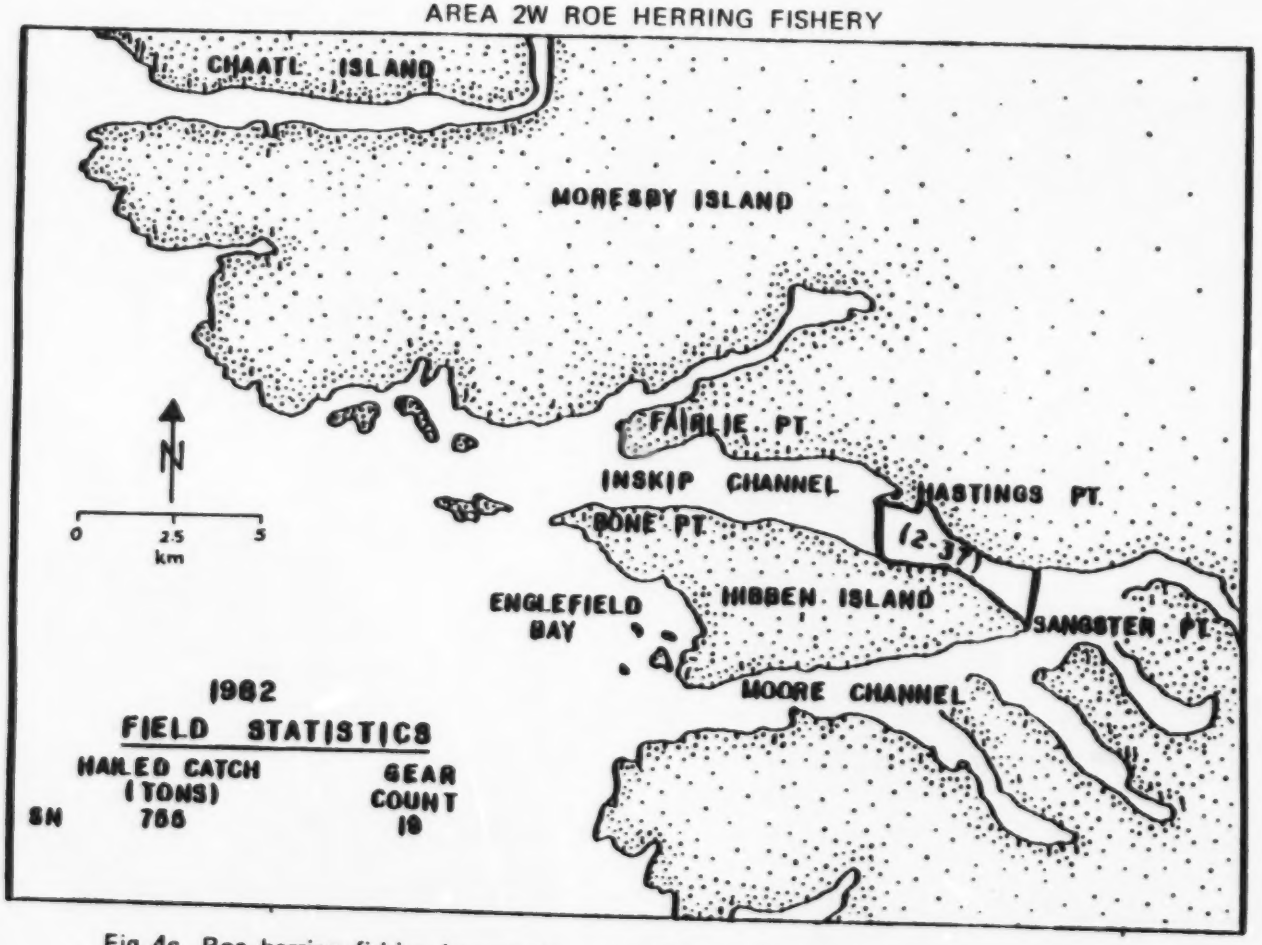

Fig. 4c. Roe herring fishing boundaries and hailed catches by gear type in Area 2W, Inskip Channel, 1982.

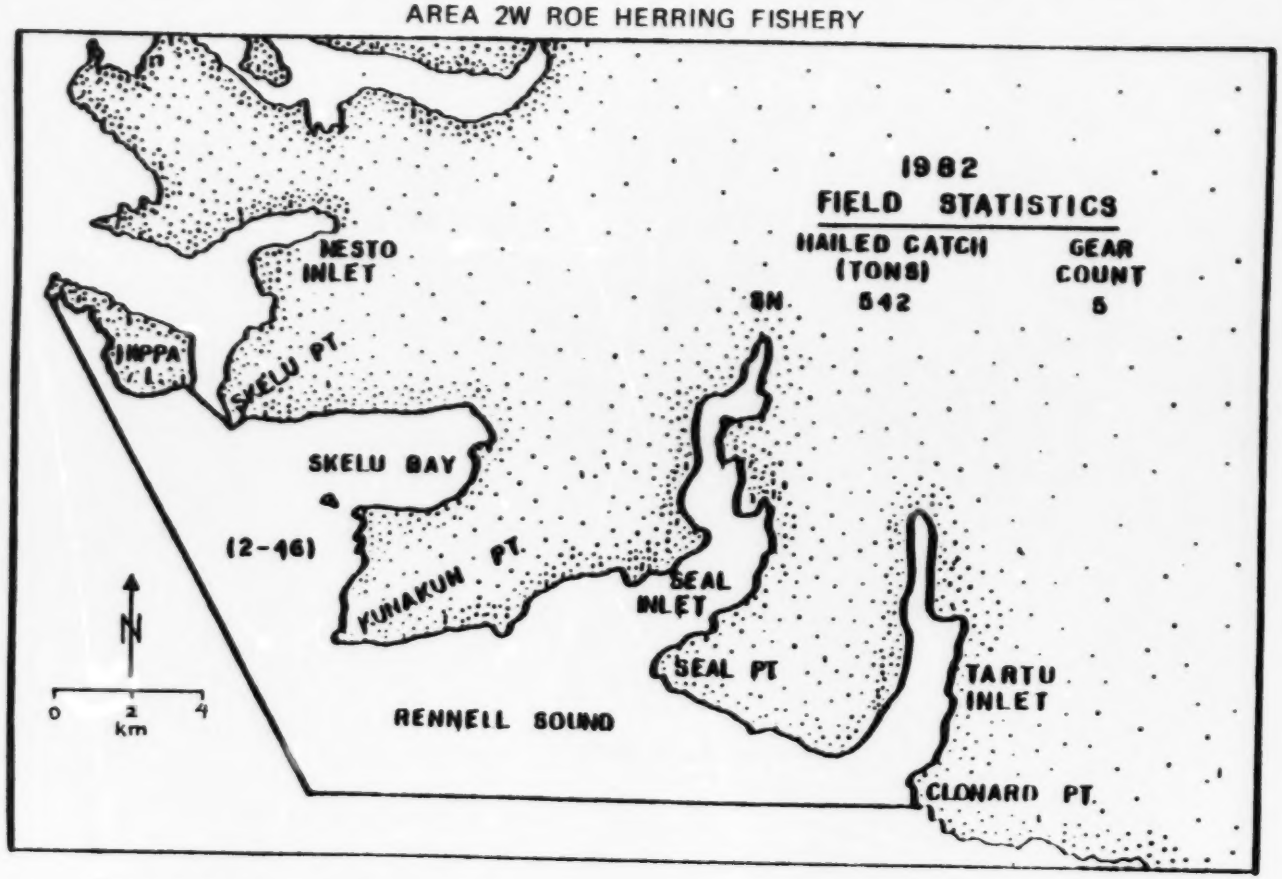

Fig. 4d. Roe herring fishing boundaries and hailed catches by gear type in Area 2W, Seal Inlet, 1982.

AREA 6 ROE HERRING FISHERY

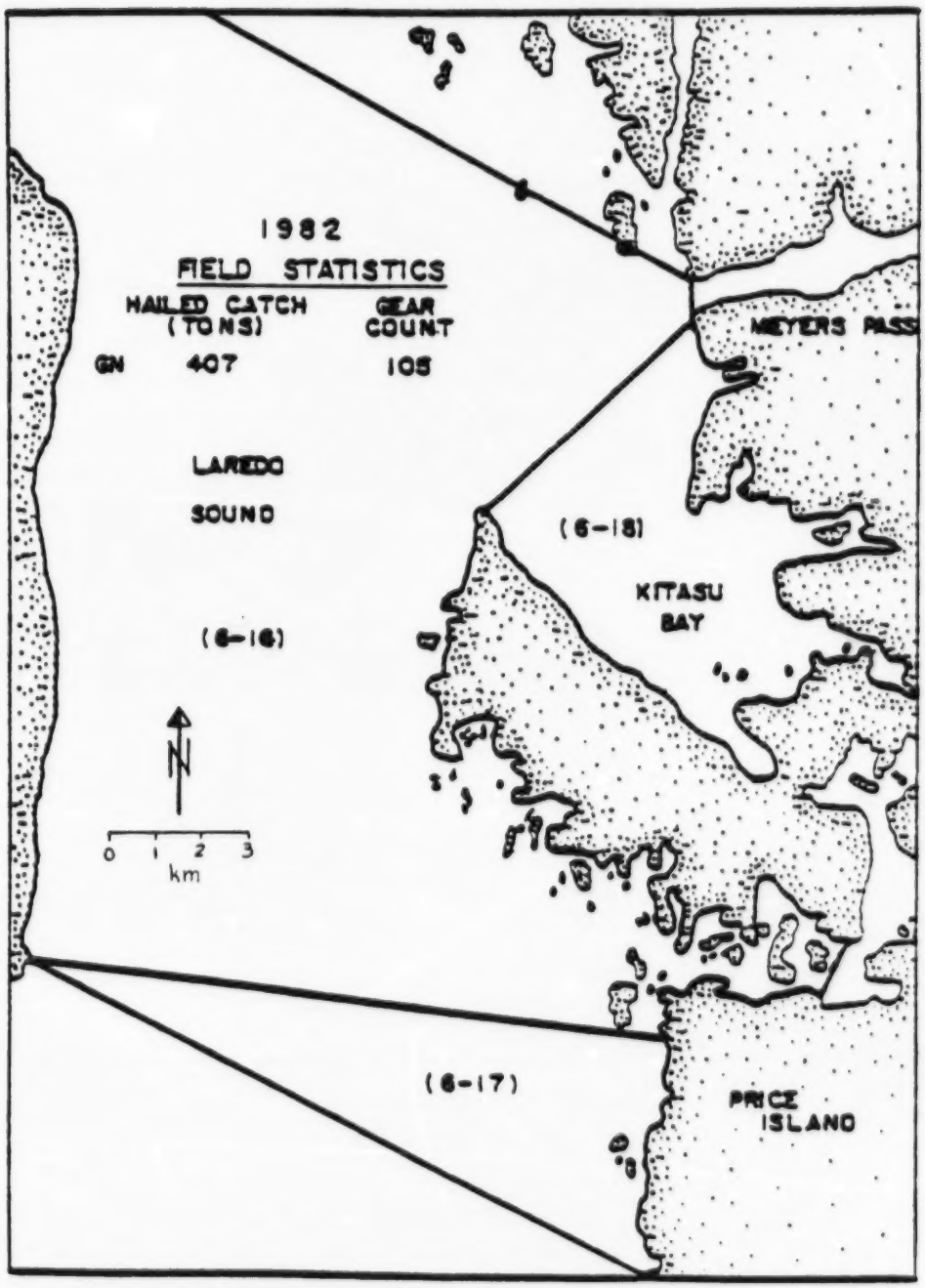

Fig. 4e. Roe herring fishing boundaries and hailed catches by gear type in Area 6, Kitasu Bay - Higgins Pass, 1982.

AREA 7 ROE HERRING FISHERY

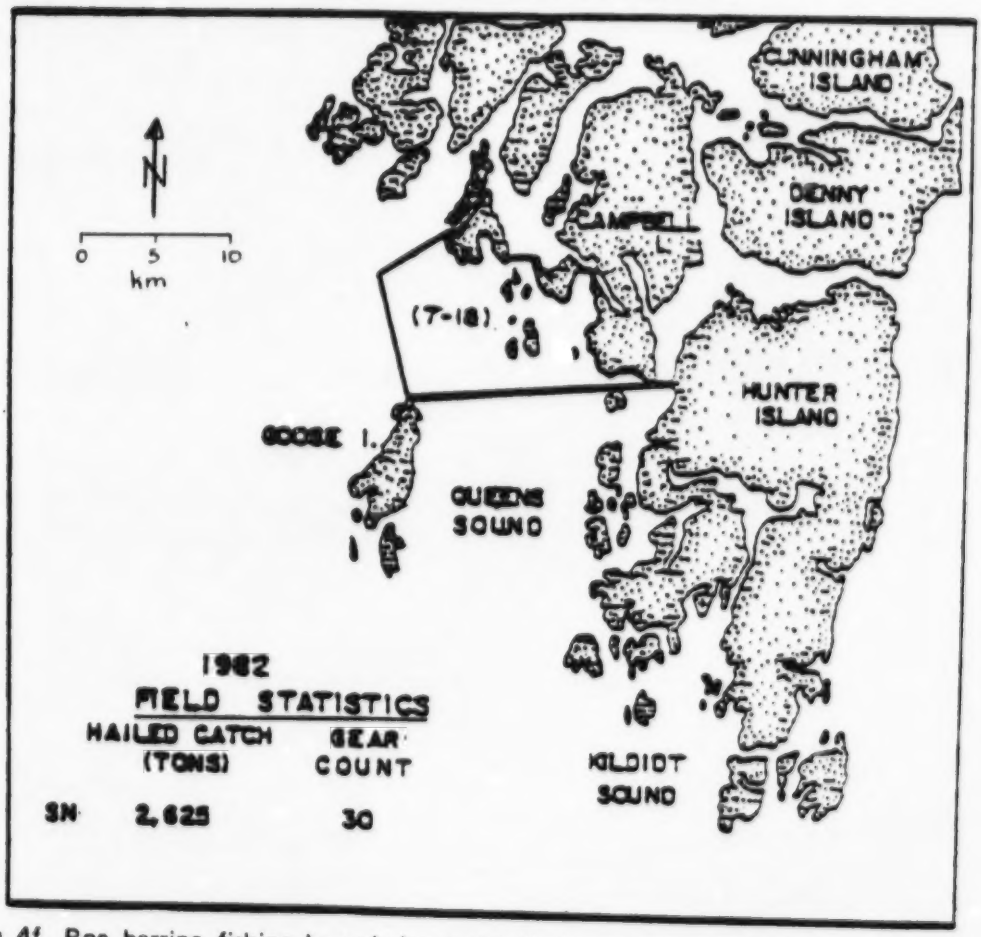

Fig. 4f. Roe herring fishing boundaries and hailed catches by gear type in Area 7, Stryker Bay, 1982.

AREA 7 ROE HERRING FISHERY

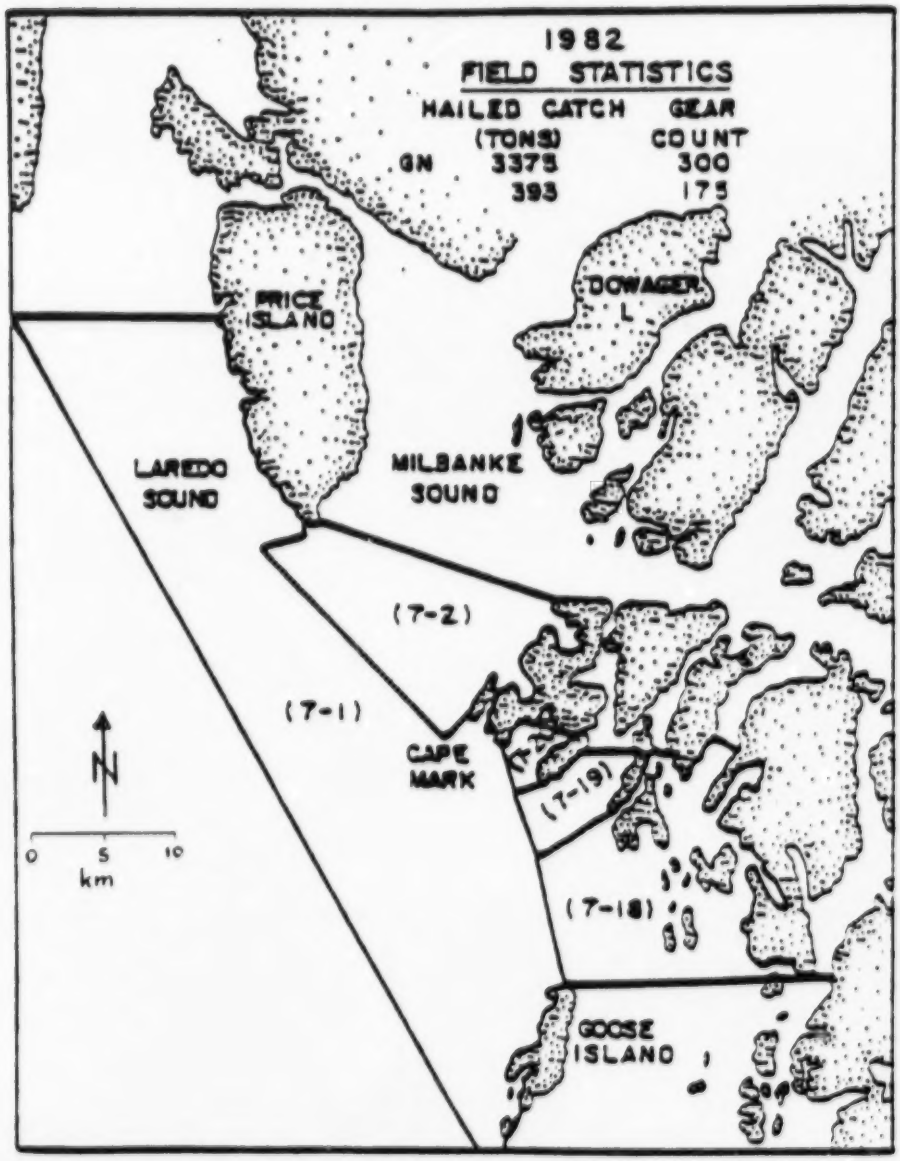

Fig. 4g. Roe herring fishing boundaries and hailed catches by gear type in Area 7, Cape Mark - Thompson Bay, 1982.

AREA 14 ROE HERRING FISHERY

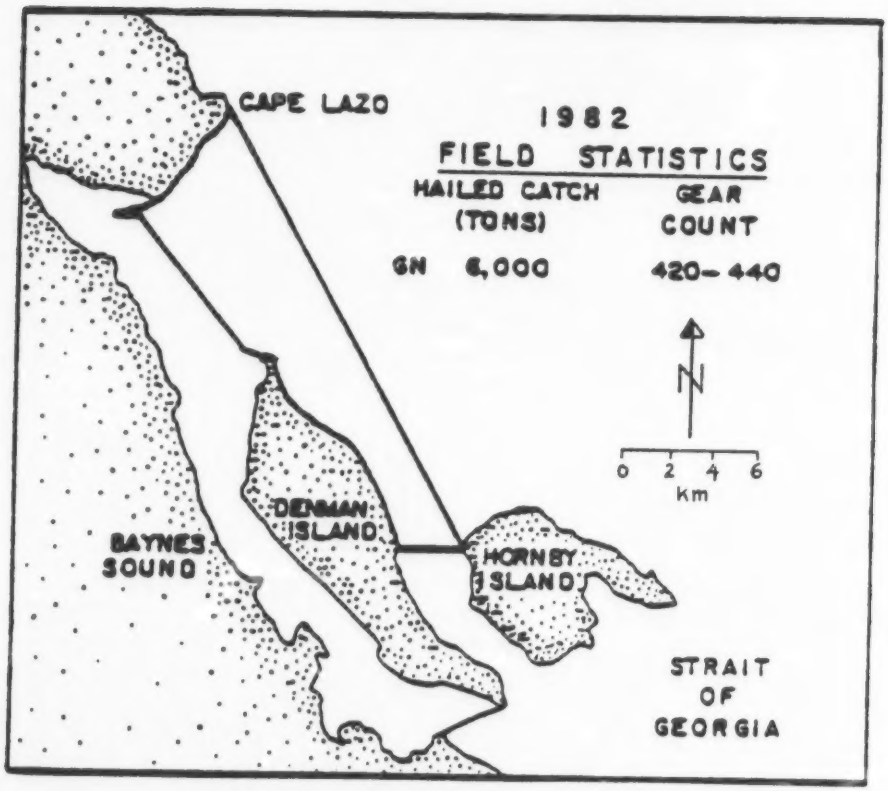

Fig. 4h. Roe herring fishing boundaries and hailed catches by gear type in Area 14, Hornby - Denman, 1982.

AREA 17 ROE HERRING FISHERY

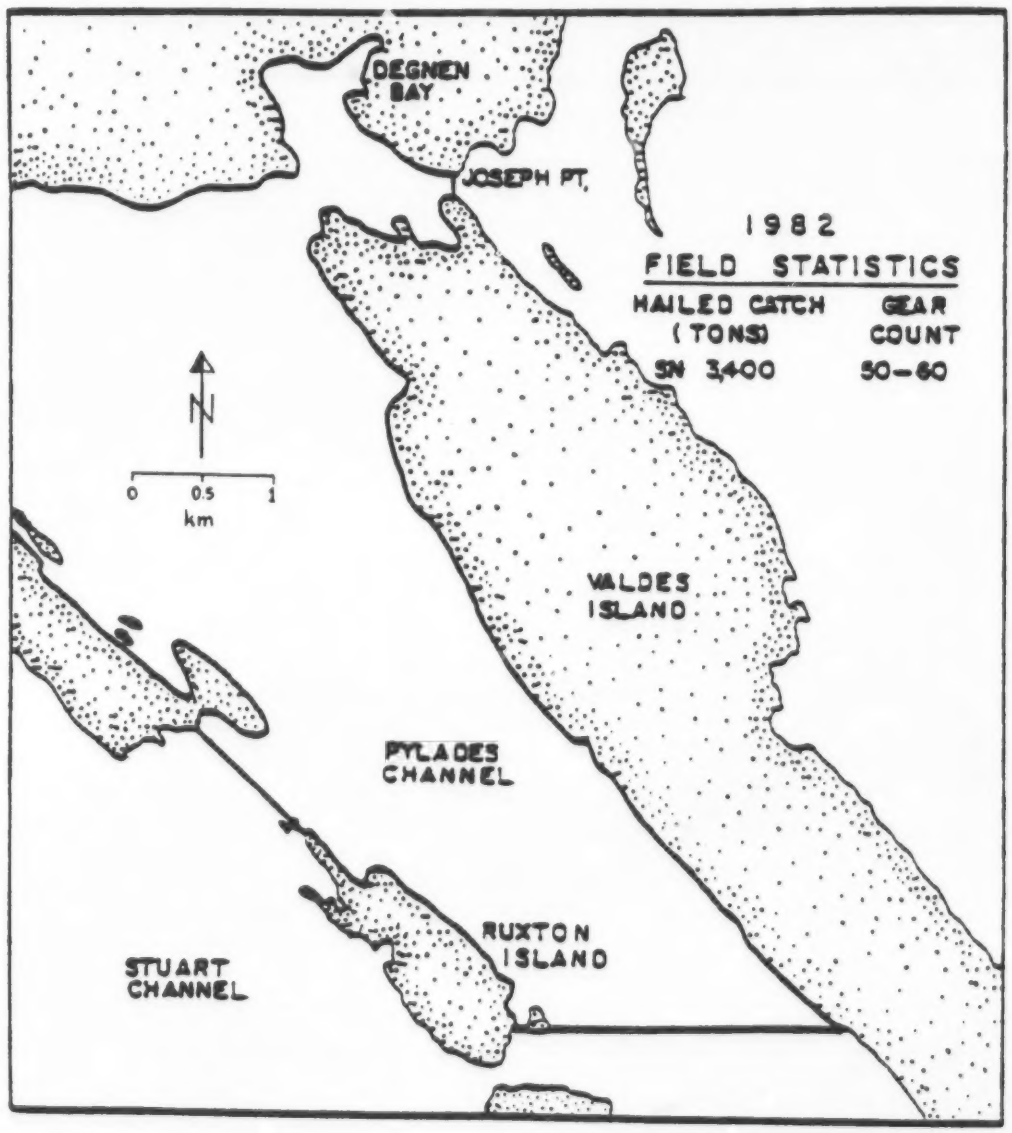

Fig. 4i. Roe herring fishing boundaries and hailed catches by gear type in Area 17, Pylades Channel, 1982.

AREA 23 ROE HERRING FISHERY

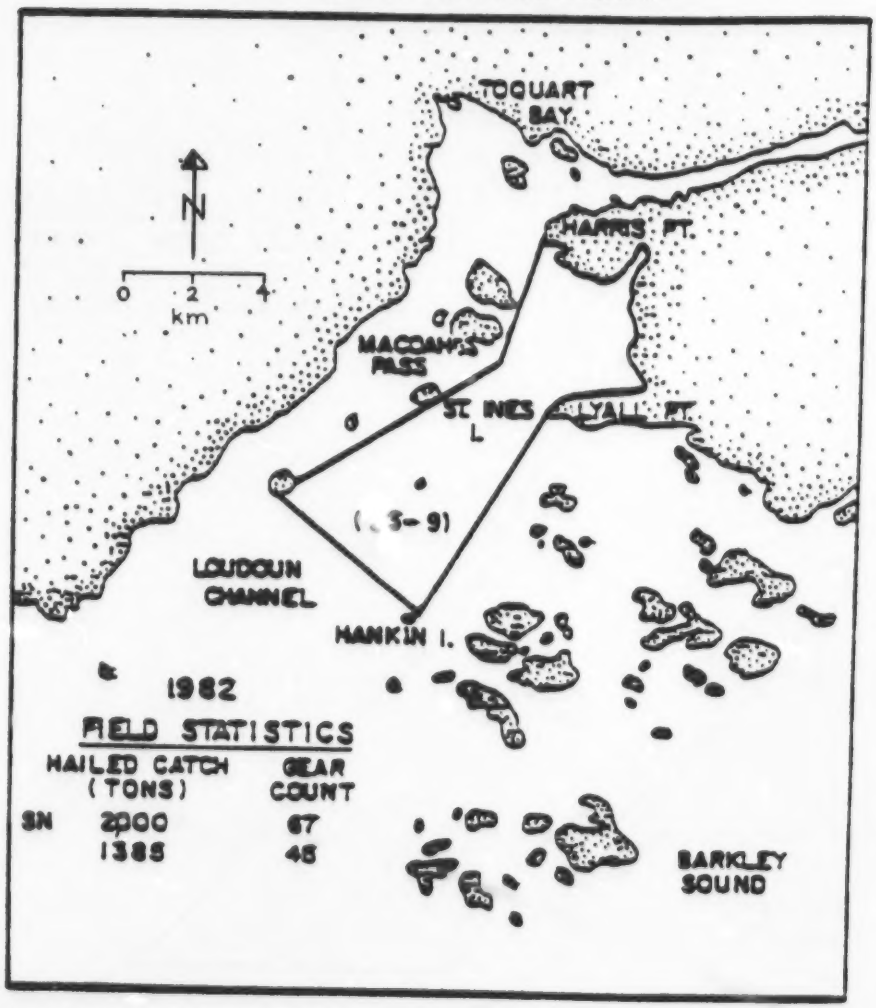

Fig. 4j. Roe herring fishing boundaries and hailed catches by gear type in Area 23, Barkley Sound, 1982.

AREA 24 ROE HERRING FISHERY

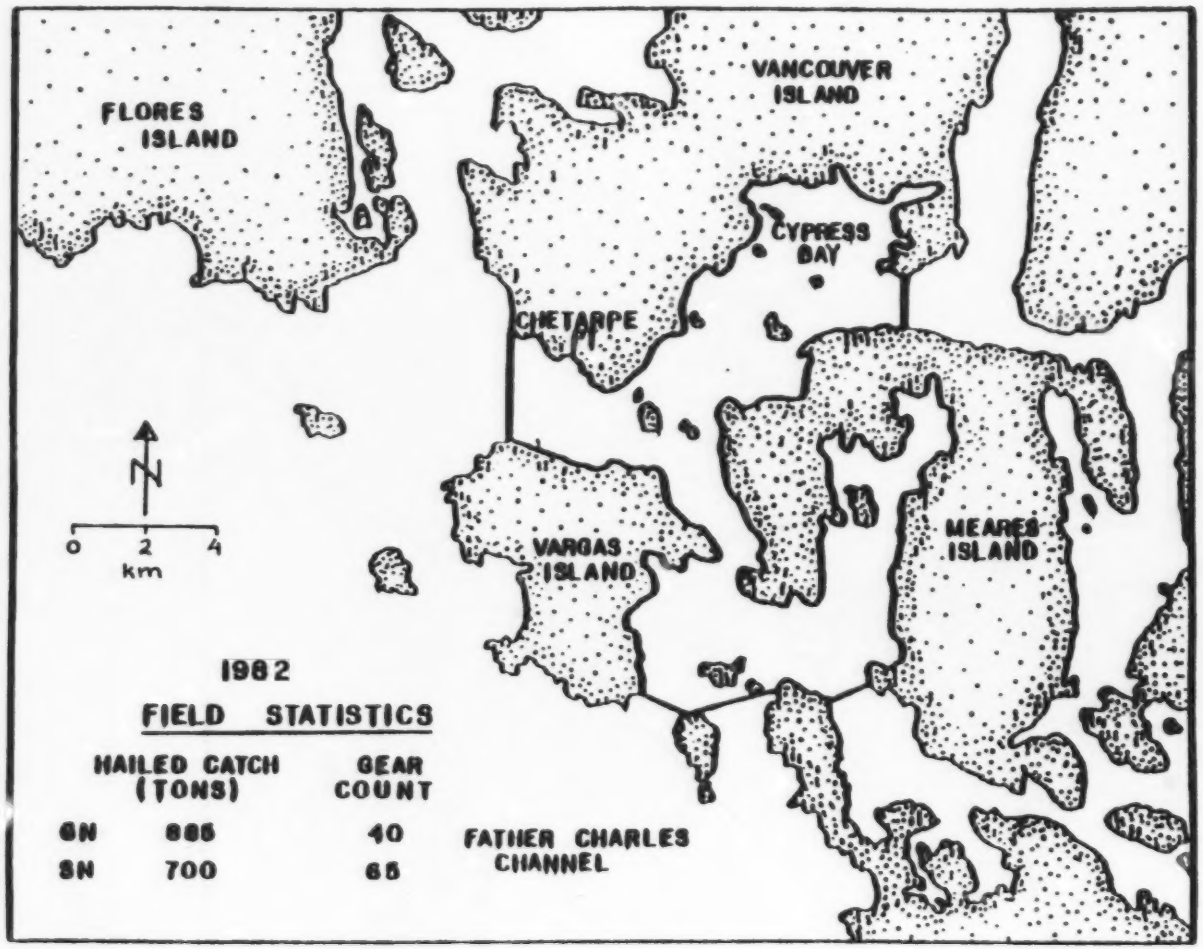

Fig. 4k. Roe herring fishing boundaries and hailed catches by gear type in Area 24, Father Charles Channel, 1982.

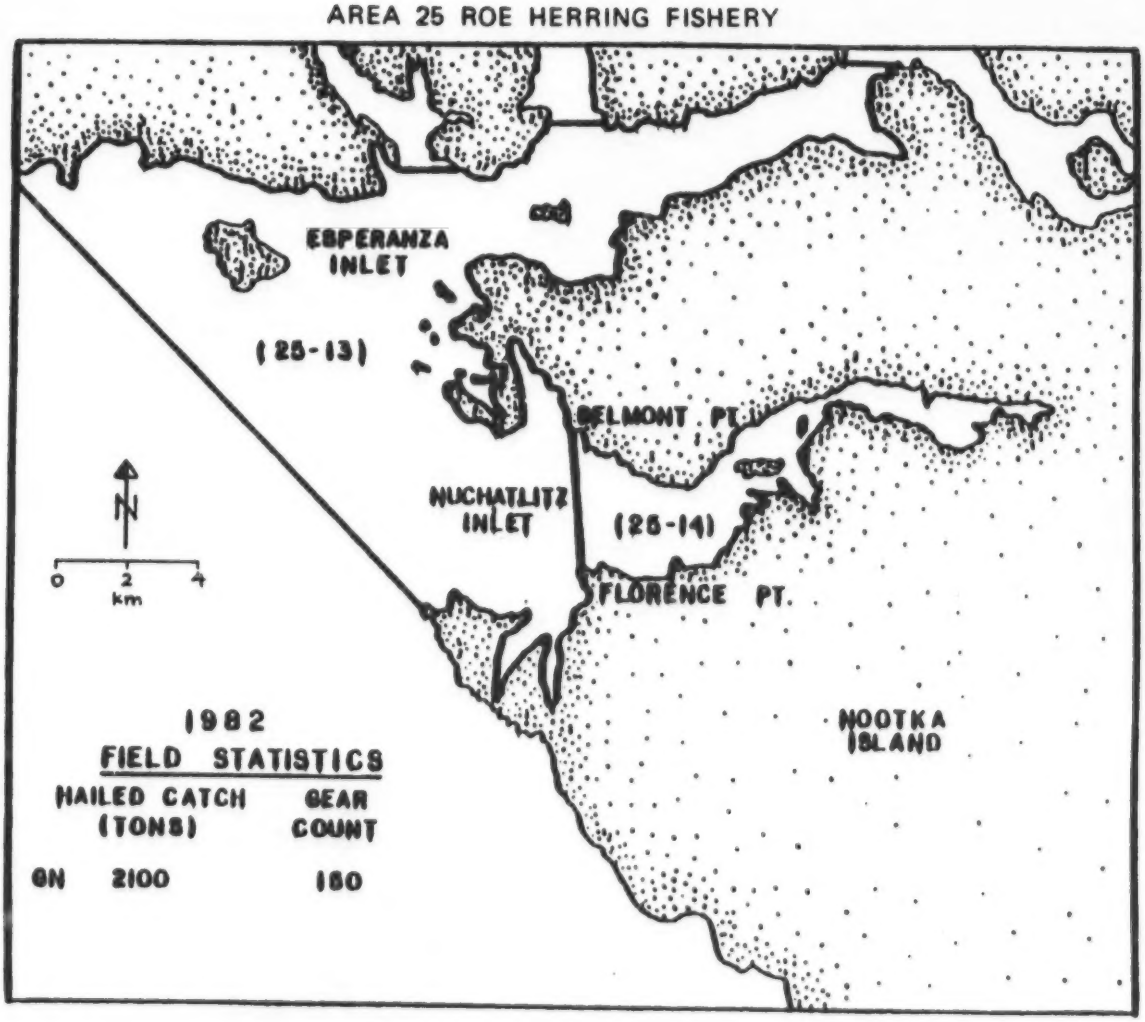

Fig. 4 l. Roe herring fishing boundaries and hailed catches by gear type in Area 25, Esperanza Inlet, 1982.

AREA 27 ROE HERRING FISHERY

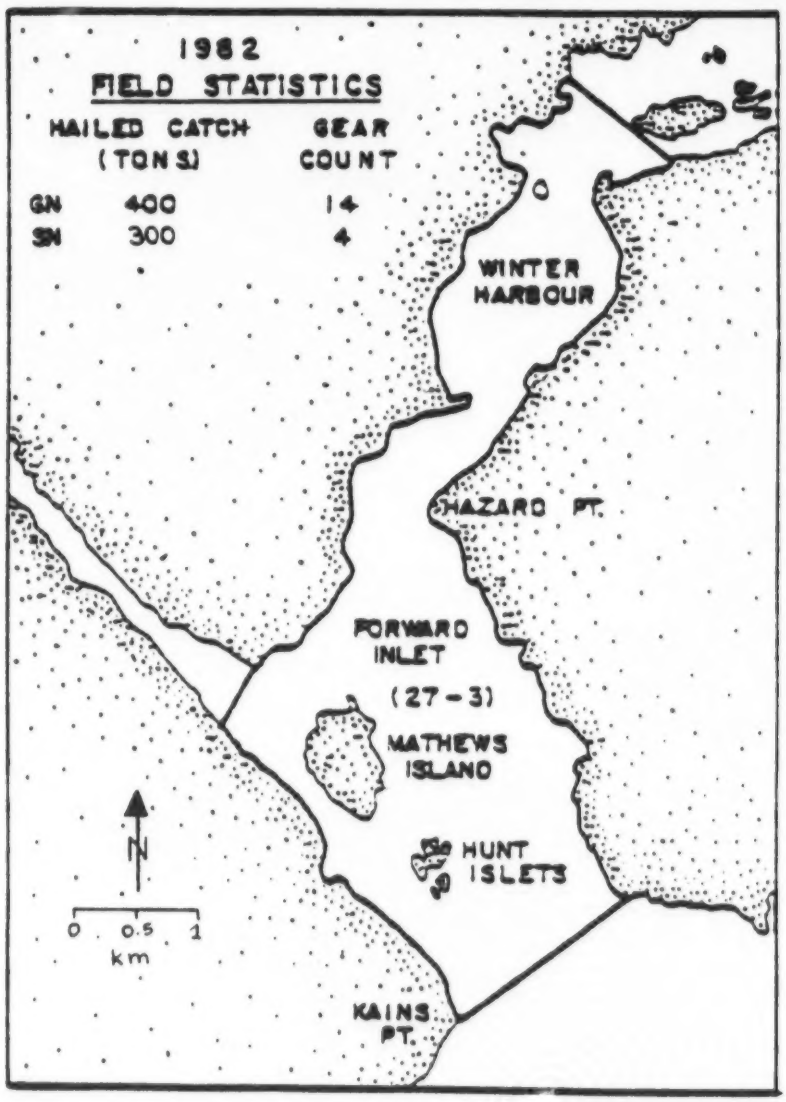

Fig. 4m. Roe herring fishing boundaries and hailed catches by gear type in Area 27, Winter Harbour, 1982.